STRATEGIC OPTIONS
FOR
ENVIRONMENTAL HEALTH
IN
ALBERTA

FINAL REPORT
January 1991

RMC

PREFACE

Health and the Environment

Increasing public awareness and concern about the environment is a hallmark of the last three decades. Initiatives to protect the environment now are commonplace - internationally, nationally, provincially. They come from government, business and individuals. As we continue our way into the 1990s there is considerable assurance that environmental issues will be with us well into the 21st century.

The public concept of the "environment" has broadened since the 1960's. We are not apart from our environment - it includes us, the human species. Activity in the biosphere can be thought of in terms of many closed, essentially stable cycles in nature and economics. These cycles extract resources from a pool, transport and then transform them into different products. The cycles decompose the products, recycle them into the pool for re-use, and then begin their processes again. Together, natural and economic cycles of human activity comprise the broader concept of *environmental systems*. Disturbances to environmental systems - because of human activity that destabilizes their cycles - can generate events that are toxic to us. If we are exposed to toxic events our health is placed at risk. In this way our health and the environment are linked.

Public Concern

Public concern about the environment increases as people experience or personalize anticipated effects of toxic events because of exposure, or because of information from television and other media. Our concern about the environment translates into concerns about its direct impact on us and our families. Direct impacts are typically thought of in terms of our health. Opinion polls reveal the extent and strength of these concerns. Over 90% of respondents in a 1989 Decima Research poll felt the following factors, among ten others, present health risks to themselves and their families: pollution of drinking water, destruction of the ozone layer, air pollution. More than two thirds of respondents felt that the ten other factors presented serious health risks as well. And the degree of perceived risk was very high: *Immediate/Life Threatening* or *Serious/Not Life Threatening*.

A 1990 poll by the same company indicates 80% of Canadians believe their health has been affected by environmental problems. Other polls throughout the 1980s elaborate and confirm the public is concerned about personal and family risks to health from environmental conditions and factors.

PREFACE continued...

Government Response

Government response to this strong public concern about health impacts is evolving. Many government departments, boards and agencies participate in environmental monitoring, and offer occupational health and environmental health engineering programs. Corrective and more recently preventive measures exist for limiting disturbances to environmental systems and the toxic events they can generate. As more holistic ideas of what health really means become widespread, and as evidence further links health with our social as well as physical environments, health promotion - including promotion of healthy public policies - is also emerging as a government role.

If government departments boards and agencies are to respond effectively to public concerns about health effects of environmental conditions and factors, they must organize their efforts in in a coherent way. Multidisciplinary knowledge must be brought to bear on environmental disturbances, their toxic consequences, the health risks and problems they cause, and the necessary corrective, preventive and health promotion strategies to deal with their harmful effects. Government responses must be organized in a way that generates public confidence. They must ensure the health and well being of individuals and their families is protected.

Organizing government efforts, however, is complicated by the many interests and voices represented in environmental health.

Who Speaks For Human Health In Alberta?

The following is an excerpt from one of several documents in a Government of Alberta News Release dated July 27, 1990, concerning dioxin and furan testing in fish from the Athabasca and Wapiti Rivers. The documents issued a health advisory released by federal and provincial governments. The excerpt quoted was a little more than one page in its original form, and was part of a three page statement of questions and answers.

PREFACE continued...

QUESTIONS AND ANSWERS ABOUT DIOXIN AND FURAN CONTAMINATION IN FISH

QUESTION: *Who is responsible for fish (and fish habitat) in Alberta?*

ANSWER: Alberta Forestry, Lands and Wildlife is responsible for fish and fish habitat management in Alberta. Our fisheries, habitat and enforcement branches work closely with other provincial and federal government departments.

QUESTION: *Who is responsible for water management in Alberta?*

ANSWER: Alberta Environment is responsible for water management in Alberta. We work closely with that department on all matters related to fish (or wildlife) habitat.

QUESTION: *Who is responsible for controlling pollution in Alberta waters, especially dioxins and furans from kraft pulp mill effluents?*

ANSWER: Alberta Environment is responsible for assuring water quality in Alberta through monitoring, licensing and regulating water use. Industries, including the forest products industry, are responsible for meeting all of the water quality requirements of their operating licenses from Alberta Environment. Alberta Forestry, Lands and Wildlife has a special role in water quality management where fish are involved because we administer the Fisheries Act within the province; this is done in close consultation with Alberta Environment and federal government departments.

Dioxins and furans (and all other organochlorines) are regulated by Health and Welfare Canada with respect to food and by Fisheries and Oceans Canada with respect to pulp and paper mill effluents in fish-bearing waters; the Pulp and Paper Mill Effluent Regulations are administered by Environment Canada. Alberta water licenses are issued by Alberta Environment with strict conditions for these contaminants in accord with federal government regulations.

QUESTION: *Who is responsible for public health standards and to advise the public when there is concern related to dioxins and furans in our water and fish?*

ANSWER: Determining the nature and extent of dioxin and furan contamination is mainly the responsibility of Alberta Environment within the province of Alberta; Alberta Forestry, Lands and Wildlife participates with respect to fish.

Environment Canada and Fisheries and Oceans Canada have joint responsibilities for scientific assessment and regulating with respect to these compounds on a national scale. Alberta, through Alberta Environment, participates in the national program to assess the problem and advise citizens of the results.

Health and Welfare Canada is responsible for assessing the results of all dioxins and furan-related scientific studies to set appropriate public health standards and to determine the public health implications of the scientific information.

Alberta Environment is the spokesperson for the Alberta Government on this matter; Alberta Forestry, Lands and Wildlife will take appropriate measures to alert the public to potential health risks whenever such risk is confirmed by the responsible agencies.

Source: Government of Alberta; News Release; July 27, 1990.

PREFACE continued...

This excerpt is interesting for at least three reasons:

- communications officials believed it was necessary to describe who was responsible for matters relevant to the problem, and had to take over a page to do so;
- five departments, at two levels of government were cited as having responsibility; and
- **Alberta Health,** the provincial department one might think would have responsibility for protecting human health, and the twenty-seven local public health units mandated to promote and protect the health of the public, were ***not*** cited anywhere in the news release, even though the release was a health advisory regarding the amount and type of fish that could be consumed safely.

In the three pages of press release questions and answers only two references were made to a health agency, Health and Welfare Canada, both included in the excerpt above.

Administratively, the matter seemed to be more about fish and the environment than about human health. With so many agencies cited with responsibility, could the public believe *anyone* was *really* responsible for *anything*?

The discussion paper **Healthy Planet, Healthy People** published in November 1989 by the Environmental Council of Alberta starts out with the following vignette:

> *Gro Harlem Brundtland, Chair of the U.N. World Commission on Environment and Development, commented at the World Health Assembly in 1988: "Recently, I was asked why health was not one of these issues [in the Commission's landmark report,* ***Our Common Future****]. My reply is: ultimately, the whole report is about health."*

And, indeed it is. But in practice, if so much is about health, and if so many are involved in health, is anyone really looking at problems from a human health perspective? With so many agencies representing so many disciplines involved in the Athabasca and Wapiti fish issue, was the human health agenda adequately represented at the table? What should be the role of Alberta Health and its system of twenty-seven local public health units in questions that link the environment and health?

This report examines issues surrounding these questions by grappling with two challenging problems: What is environmental health? What are the strategic options for organizing its future delivery in Alberta?

PREFACE continued...

Acknowledgements

Our work as a consulting team was made possible by the cooperation and support of many individuals. We wish to acknowledge:

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    - Mr. George Flynn, Director Environmental Health Services Branch (EHS),
    - Mr. Trevor Hodge, Director Program Support Services Branch, Alberta Health,
    - Mr. John Pelton, Director, Environmental Health Services Branch, Calgary Health Services (on behalf of the Health Unit Association of Alberta),

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    - Mr. John Shaw, Environmental Engineer, EHS (seconded to the Working Committee).

Ms. Barbara MacEwan, Administrative Assistant, and other EHS staff assisted us by identifying and collecting various file reports and materials. Special thanks are offered to all who gave of their time and ideas. A list of our contacts is provided in the first appendix. Persons we interviewed are listed in the inventories of Volume 2 of this report. We ask indulgence for any omissions.

This study was conducted by RMC Resources Management Consultants Ltd. Our consulting team benefited greatly from its distinguished advisor, Dr. Morris Schaefer, Professor Emeritus School of Public Health, University of North Carolina.

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VOLUME 2

INTRODUCTION

PART A: INVENTORY OF ENVIRONMENTAL HEALTH SERVICES IN ALBERTA

PART B: INVENTORY OF INFORMATION SYSTEMS

EXECUTIVE SUMMARY

Introduction

During her April 25, 1990 presentation of budget estimates, the Minister of Health announced she had requested her department, Alberta Health, to begin work on an environmental health strategic plan. Shortly after, Alberta Health commissioned RMC Resources Management Consultants Ltd. to conduct a study to develop strategic options for environmental health in Alberta. This report concludes our study. It is based on extensive consultations with officials from many sectors, including Alberta Health and the health units.

The report examines the nature of ***environmental health*** using the contemporary definition of health and views on its determinants. ***Health*** is defined as a state of complete physical, mental, social and spiritual well-being. Our health is affected by many factors, among them the environment. We function in a physical and social environment that contains agents that affect our health in its contemporary definition. The agents are biological, chemical, physical and social factors that induce stress. Such stress-inducers may affect our health as they reach us through direct exposure, or indirectly through various media, for example, water, food, air, jobs, television and so on.

These concepts help define the subject of our report. In its broadest sense, *environmental health* is concerned with the ways in which human health is affected by factors in our physical and social environments.

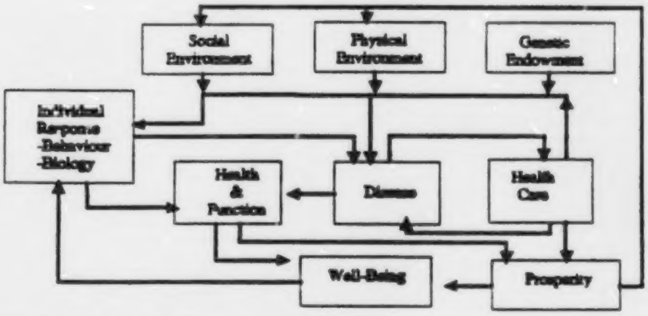
In the first part of this report, based on this definition, we establish a conceptual framework for providing environmental health services. We then use the framework to derive a health agenda of priority health outcomes and associated health hazards, and health enhancing behaviours. In a second part of the report, we assess present arrangements for the delivery of environmental health services, and how they are being carried out. The assessment includes a review of the history of such services in the province. In a third part, we present strategic options for strengthening service delivery.

Throughout the report, we keep in mind a simple but powerful image, one that is well known to public health professionals: John Snow and the Broad Street Pump. Last century, John Snow determined the link between a cholera epidemic in London and a polluted water source, the Broad Street pump. He convinced the local authorities to remove the pump handle, limited the source of the infection and curbed the spread of the disease.

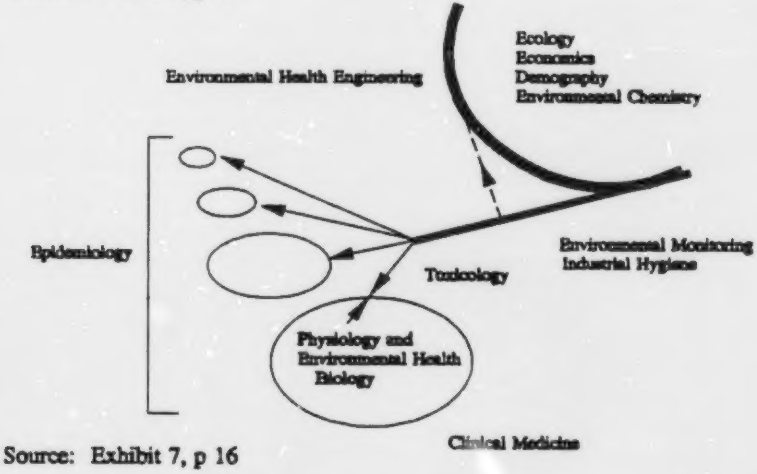
This image is the basis for a theme carried throughout the report: a journey to Broad Street to find John Snow's new pump, and along the way, the acquisition of concepts and methods, the tools to dismantle its handle. Milestones on this journey are displayed in Exhibit 37 (from Chapter 6).

EXHIBIT 37

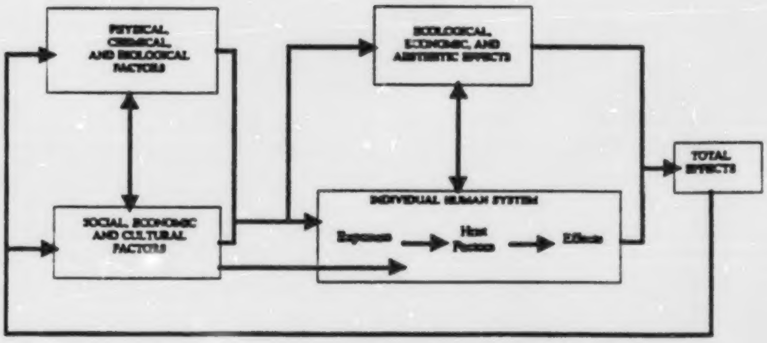
MILESTONES ON THE JOURNEY IN SEARCH OF THE BROAD STREET PUMP


Social Environment
Physical Environment
Genetic Endowment
Individual Response
-Behaviour
-Biology
Health & Function
Disease
Health Care
Well-Being
Prosperity

Source: Exhibit 4, p 10


Environmental Health Engineering
Ecology
Economics
Demography
Environmental Chemistry
Epidemiology
Environmental Monitoring
Industrial Hygiene
Toxicology
Physiology and
Environmental Health
Biology
Clinical Medicine

Source: Exhibit 7, p 16


PHYSICAL, CHEMICAL, AND BIOLOGICAL FACTORS
ECOLOGICAL, ECONOMIC, AND AESTHETIC EFFECTS
TOTAL EFFECTS
SOCIAL, ECONOMIC AND CULTURAL FACTORS
INDIVIDUAL HUMAN SYSTEM
Exposure
Host Factors
Effects

Source: Exhibit 9, p 17

Present Situation

The Province of Alberta has achieved acknowledged success in putting in place effective measures for health and environmental protection and for resource conservation. It has done so while fostering a business climate in which sustained economic growth and development can flourish. Healthy public policy is above all, a matter of balance, cooperation and coordination. The problems that Albertans must confront in moving towards the next century are multi-dimensional and require a deliberate effort at coordinating action on a variety of fronts.

The province enjoys a wide array of resources in ***environmental health***. Over thirty government departments, boards and agencies with roles in this field are inventoried in Volume 2 of this report. Much of what Alberta needs, therefore, is already in place; and much of it is functioning well. But, our examination of the present situation suggests that there is a definite need to adopt a more collaborative approach to the organization and delivery of environmental health services in the province. There is a further need to strengthen province-wide abilities to respond to ***human*** health concerns on the basis of credible expertise, sound information and scientific understanding. And, there is a need to focus governmental responsibility for dealing with environmental issues that affect human health.

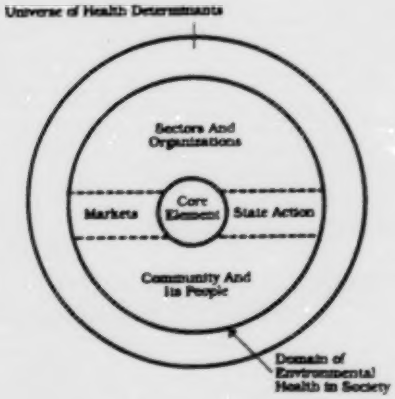
The Environmental Health Services Branch of Alberta Health, together with the health units, serve Albertans through the mandate of the Public Health Act. In terms of the contemporary definition of health, and our definition of environmental health, many of the programs offered by the health units, and much of the business of the Public Health Division of Alberta Health is concerned with environmental health. Our findings indicate the collaborative approach required between government agencies involved in environmental health is also required between programs within the health units, and branches within the Public Health Division.

We detail our assessment of the present situation in the main body of this report. In brief, past successes and achievements focused on protecting the public from biological hazards. Efforts to this end remain necessary since risks to human health from biological hazards remain with us, however well they may be controlled by public health inspection programs. Present and future circumstances, nevertheless, require the health sector to deal with a wider domain than biological hazards. New directions are necessary, together with government support for their implementation.

EXHIBIT 37 continued...

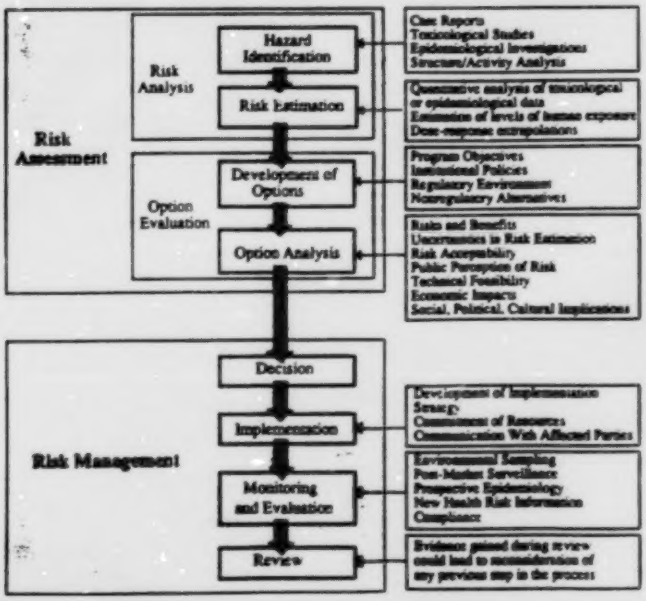
MILESTONES ON THE JOURNEY IN SEARCH OF THE BROAD STREET PUMP

A Spherical Model:
Modulation of Human Activity In the Interest of Community Health


Universe of Health Determinants
Sectors And Organizations
Markets
Core Element
State Action
Community And Its People
Domain of Environmental Health in Society

Source: Exhibit 10

A Framework for Risk Assessment and Risk Management


Risk Assessment
Risk Analysis
Hazard Identification
Risk Estimation
Option Evaluation
Development of Options
Option Analysis
Case Reports
Toxicological Studies
Epidemiological Investigations
Structure/Activity Analysis
Quantitative analysis of toxicological or epidemiological data
Estimation of levels of human exposure
Dose-response extrapolations
Program Objectives
Institutional Policies
Regulatory Environment
Nonregulatory Alternatives
Risks and Benefits
Uncertainties in Risk Estimation
Risk Acceptability
Public Perception of Risk
Technical Feasibility
Economic Impacts
Social, Political, Cultural Implications
Risk Management
Decision
Implementation
Monitoring and Evaluation
Review
Development of Implementation Strategy
Commitment of Resources
Communication With Affected Parties
Environmental Sampling
Post-Market Surveillance
Prospective Epidemiology
New Health Risk Information
Compliance
Evidence gained during review could lead to reconsideration of any previous step in the process

Source: Exhibit 14

The Evidence for Taking Action

What evidence is there that the system of delivery of environmental health services faces problems that require redirection and supportive government action? We offer a capsule summary of evidence from our report.

- As in John Snow's time our health remains at risk from microbial agents that can cause known outcomes of acute disease and illness. But now we face added hazards from low dose chronic exposures to many factors in the environment whose effect are likely multi-causal and not always known until the harm is done. These exposures are linked to the degradation of the environment, that is, to destabilization of its cycles. The hazards result from global circumstances - for example, thinning of the ozone layer, and from circumstances specific to Alberta -diversification of the provincial economy in petroleum and gas production, petrochemicals, pulp mills, mining, forestry and agriculture.

  Scientific evidence is well established on the harmful effects of many microbial agents and forms the basis for present prevention and protection programs of public health inspection. Scientific evidence exists in many cases and is mounting in others, on the harmful effects of chronic, low dose exposures to various chemical and physical agents. Such scientific evidence is the basis for identifying a list of priority substances, chemicals and groups of chemicals, elements and wastes and designating specific entries on the list as "toxic" under the *Canadian Environmental Protection Act.*

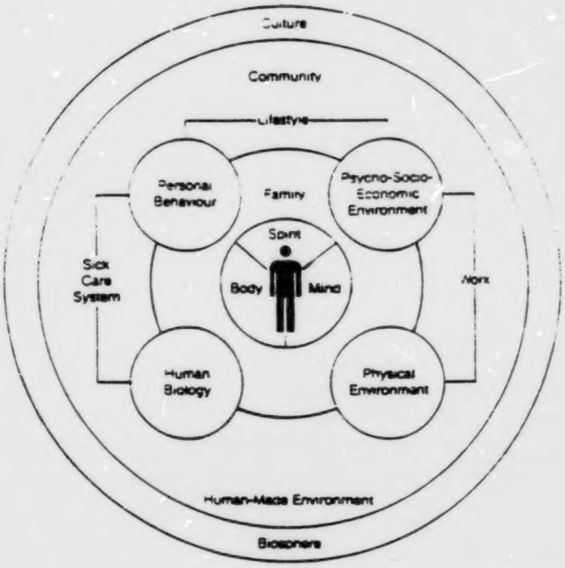
- Public concern about the environment is personalized - it is about *health effects* of environmental factors on individuals and their families. The evidence for health being the focus of concern comes from public opinion polls; from the high and increasing number of calls and "action requests" to provide a response to questions on environmental health impacts from Ministers and the public faced by Alberta Environment and Alberta Health; and from demands on many health units to investigate and abate conditions that are, or may become injurious or dangerous to health.

- Although the province has a wide array of resources for responding to hazards that present risks to human health in the environment, intersectoral cooperation and coordination among governmental organizations responsible for these resources requires strengthening. The provincial system also requires more significant input by Alberta Health. The evidence for this comes from the 1986 report by Mr. Lee, from our own review as documented in this report, and from frank comments about the weakness of the present response of Alberta Health, expressed by senior representatives of government departments at the second of two strategic planning seminars held during this study.

EXHIBIT 37 continued...

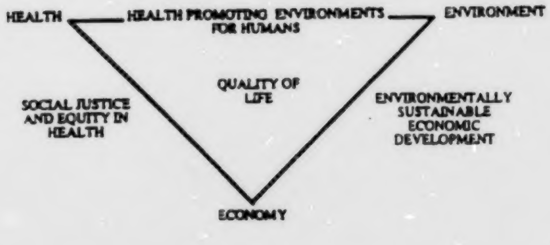
MILESTONES ON THE JOURNEY IN SEARCH OF THE BROAD STREET PUMP

The Mandala of Health
A Model of the Human Ecosystem


Culture
Community
Lifestyle
Personal Behaviour
Family
Psycho-Socio-Economic Environment
Spirit
Sick Care System
Body
Mind
Work
Human Biology
Physical Environment
Human-Made Environment
Biosphere

Source: Exhibit 35

The Linkage of Health, Environment and Economy


HEALTH
HEALTH PROMOTING ENVIRONMENTS FOR HUMANS
ENVIRONMENT
QUALITY OF LIFE
SOCIAL JUSTICE AND EQUITY IN HEALTH
ENVIRONMENTALLY SUSTAINABLE ECONOMIC DEVELOPMENT
ECONOMY

Source: Exhibit 36

The Evidence for Taking Action continued...

- In contrast to this scientific evidence, public concern, and intersectoral recognition of coordination problems, there has been an ambivalent attitude to the Environmental Health Services Branch and to Environmental Health programs at the health units. The evidence for this is

    - low priority, in terms of the program's share of total funding, both locally and provincially;

    - the status of present Environmental Health Branch professional resources, which are fewer in 1991 than when it was established in 1977, despite an increase in the amount and scope of work, and despite recommendations in 1986 to increase them;

    - the relative isolation of the Environmental Health Services Branch from the other Branches in the Public Health Division, despite the fact that many of the Division's services are within the contemporary definition of "environmental health";

    - uncertainty within Alberta Health about pursuing a mandate beyond biological hazards, despite ongoing involvement with chemical and physical hazards, both at the Branch and at local health units, through action requests, investigations involving risks to human health from chemical and physical agents, and so on; and

    - inability to attract senior level advocacy for environmental health within the health sector.

- Finally, because so many parties are involved in dealing with environmental issues, the human health perspective can be lost, leading to the question: "Who speaks for human health in Alberta?". An example of evidence for this is in the Preface to this report, the lack of a role for Alberta Health and its health units in the communication of a health advisory on fish contaminated by dioxins and furans.

Recommended Course of Action

In Chapter 5 of the report we present thirty-three strategies for responding to these problems. The full list is found in Chapter 5 (pp 166-170). The strategies are arranged in two groups. The first group has twenty-four strategies (E.1.-E.24.), identified as the **Essential Option**. The second group has nine strategies, identified as the **Wider Options**. We recommend the approval and timely implementation of the twenty-four strategies of the **Essential Option** (pp 166-169).

Recommended Course of Action continued...

The **Essential Option**:

- clears up the matter of "Who Speaks for Human Health in Alberta?" by recommending the Minister of Health have this responsibility (E.1.-E.3.);
- establishes a positive government response to public concern about the health-environment link, by recommending the Ministers responsible for the two principal departments involved, the Minister of Health and the Minister of the Environment, report annually to Albertans on the Status of Environmental Health - The Health of the Environment and The Health of the People (E.5.-E.7.);
- sets out a mandate for the Environmental Health Program of Alberta Health that includes traditional and expanded areas of responsibility; provides for necessary new resources; strengthens processes and procedures for *inter* and *intra* sectoral cooperation and collaboration (E.9.-E.17.);
- initiates upgrading of Public Health Inspectors' skills to meet the needs of their new mandate and provides interim relief to pressures faced by local health units in their Environmental Health programs (E.18.-E.19.);
- introduces health into Environmental Impact Assessments (E.20.-E.23.); and
- establishes an important study to review future functions of environmental health and their implications for the role of Public Health Inspectors and their training.

In our view, the **Essential Option** provides a sound basis for dealing with critical problems in delivery of services in the short term, yet establishes a framework that provides direction for the longer term. This option is responsive to public concerns, to intersectoral and health sector inputs, and to contemporary trends in health service delivery.

Wider Options

We also present nine further strategic directions for strengthening the system of delivery of environmental health services. These are suitable for action in the following two to five year period, although early action for strengthening the health units is warranted (W.1.-W.5.).

Resource Implications

The required resources are detailed in Chapter 6 (pp 172-173). We estimate the incremental cost of implementing the twenty-four elements of the **Essential Option** will be about $1 million.

There is consensus among senior officials of government departments, boards and agencies that Alberta Health should take an active part in senior level, intersectoral discussions and decision making on environmental health matters. In essence, there is agreement that Alberta Health should have a "seat at the table". However, as stated bluntly by senior officials at the second strategic planning seminar in our study, Alberta Health must either come up with the resources it needs to play an effective part, or it should get out of the environmental health business. The present allocation to Environmental Health, including health unit operations is $7-8 million, of which $0.5 million is the budget for the Environmental Health Services Branch in its role as provider of expert advice to the field and to Government on human health impacts of environmental factors. At the seminar this was considered by many outside of Alberta Health as insufficient for the required function of the Branch, and in the context of the importance perceived for this role, small compared to the total Alberta Health budget of $3.1 billion.

In view of (1) the degree of public concern over health impacts of environmental factors, (2) the limitations of present health sector resources to respond effectively, and (3) the intersectoral concern that Alberta Health needs to allocate more resources to environmental health if it is to play an effective part, the added level of resources we propose for the Environmental Health Services Branch appears warranted.

1. INTRODUCTION

Present circumstances in environmental health appear analogous to historic events of the mid-19th century. In this chapter we outline the analogy. We also briefly describe the origins of this study, its mandate and methods, and how our report is organized.

1.1 BACKGROUND AND TERMS OF REFERENCE

Back to the Future

In 1849 there was an outbreak of cholera in London, England. Without the benefit of a developed germ theory of disease and without the scientific capability to isolate or identify pathogenic organisms, John Snow, a physician, accurately surmised the relationship between the polluted water supply at the Broad Street pump and the spread of the contagious disease. He convinced the city council to remove the pump handle, thereby preventing people from using the water, stopping the source of infection, and causing the epidemic to subside.

This historic incident, well known among public health professionals, illustrates three important considerations: the link between a degraded environment and human illness; a successful determination of the cause of a disease by using only epidemiological evidence; and the decisive action taken by local regulators in the face of uncertainty.

In 1991, with the benefit of scientifically grounded regulatory interventions to limit biological hazards, Albertans continue to experience the link between the environment and human health. The link, however, now includes chemicals and physical hazards previously unknown or thought to be harmless. We now face the effects of their cumulative interactions on the biosphere - for example, degradation of the ozone layer - and the consequent health risks.

No less than in the time of John Snow, we still need to consider the cause and effect relationships between a degraded environment and ill health. These relationships are now seen to have more insidious and subtle manifestations, for example, mutagenesis, developmental delay, and psychological effects. We often lack the theoretical basis to explain such cause effect relationships, a problem compounded by our ability to measure increasingly minute amounts of agents which we believe to be harmful.

As in the time of John Snow, local regulators still face difficult decisions. Do they take action to protect the public, or do they tolerate suspected but unknown effects of a degraded environment? Taking protective action may still generate contentious economic and social impacts. Tolerating unknown effects, particularly those from chronic, low-level exposures, may generate human damage that only becomes evident in the future - after the fact, after the harm is done.

1.1 BACKGROUND AND TERMS OF REFERENCE continued...

The Search for the Pump and the Handle

The high dose single microbial agent of John Snow's time now joins many new agents that may be, or are, harmful to us through low dose, chronic exposure. These new agents cause harm through a blurred, unknown and probably multiple causality. The germs of John Snow's time are still here, but they are kept at bay as long as we continue our health inspection and communicable disease control programs, and expand the prevention and health promotion efforts of public health inspectors. But, in addition to microbiological agents, we now have dioxins, furans, various heavy metals and other hazardous materials in our water, as well as our air, food and soil. We have landfills overflowing with wastes, many of them toxic. We have a biosphere increasingly requiring secondary and even tertiary environmental care because of insults to it caused by human activity.

Surveys indicate over 80% of Canadians believe their health has been affected by environmental problems.[1] To reflect on the analogy with John Snow's time, we know the water is polluted, but we cannot often tell where the Broad Street pump is and we are not at all sure whether to remove the handle. Life is more complicated. Our need, however, to understand better the link between health and the environment, to find and deal with the new Broad Street pumps remains compelling.

A Mandate from the Minister of Health

During the 1990-1991 presentation of Department of Health budget estimates, the Honourable Nancy Betkowski, Minister of Health reaffirmed her belief in the link between environment and health and placed it in the context of sustainable development, the leading concept of the 1987 report of the World Commission on Environment and Development (the Brundtland Commission):

> *... I do not believe you can draw a line between our health and our environment. Our health will suffer if we destroy our ecosystems and use up our resources. Environmental and resource sustainability are prerequisites for maintaining good health. We must, therefore, strive to ensure that our efforts to improve our economy provide protection for the health of Albertans, the health of our province, and that we foster the concept of sustainable development for our children and for our grandchildren.*[2]

---

[1] Decima Research, 1990.

[2] Alberta Hansard; 1990.

EXHIBIT 1

Terms of Reference: Development of Strategic Options for Environmental Health in Alberta

1. Identify the high priority health outcomes related to communicable diseases, chronic/non-communicable diseases and wellness that are significantly impacted by environmental factors.

2. Identify key stakeholders in the area of environmental health in Alberta.

3. Identify and analyze the range of environmental health services provided in Alberta, the structure, driving forces, trends, key success factors and the strategic issues facing the key players, with a particular focus on Alberta Health.

4. Examine the nature and strength of the inter-relationships between the Environmental Health Services Branch and other branches, departments, governments, and external agencies.

5. Define those aspects of environmental health services which fall within the jurisdiction of Alberta Health.

6. Consult with key stakeholders and a selected focus group of experts to develop and priorize policy options.

7. Develop a series of strategic options related to the identified high priority health outcomes, including implications for the management, organization and funding of environmental health services.

8. Make specific recommendations regarding the organization and management of environmental health for the province.

9. Forecast Alberta Health's future direction, structure, delivery systems, legislation and resources for environmental health.

10. Provide cost estimates for recommended options.

Source: **Alberta Health; Request for Proposal, Development of Strategic Options for Environmental Health in Alberta; January 12, 1990.**

1.1 BACKGROUND AND TERMS OF REFERENCE continued...

The Minister chose this opportunity to announce that she had requested her department to prepare an environmental health strategic plan in consultation with local health units, various departments of government and a wide range of stakeholders.

To this end, on May 2, 1990, RMC Resources Management Consultants Limited was competitively awarded a contract to conduct a study of environmental health issues and concerns in order to develop strategic options for environmental health in Alberta. The Terms of Reference for the study are outlined in Exhibit 1. This report is the final output of the study.

1.2 STUDY METHODS

The Consulting Team and Its Approach to the Study

The study process was strategic in concept and broadly consultative in execution. The consulting team featured expertise from several disciplines including health system planning and management, epidemiology, toxicology, socio-economic impact assessment. An external advisor acknowledged for extensive contribution to Public Health, specifically to Environmental Health, added an integrating and global perspective to the team by virtue of his work as an Expert Advisory Panel member and ongoing consultant to the World Health Organization in these areas.

The model displayed in Exhibit 2 outlines the strategic planning methodology underpinning our approach to this study. The key to the model is understanding the gap between the present state of Environmental Health Service delivery in Alberta and its future, desired state. A review of strengths and weaknesses together with opportunities and constraints characterising the present situation, provided a base from which the study team could begin to develop a picture of system-wide needs, and assess the abilities and will to address them.

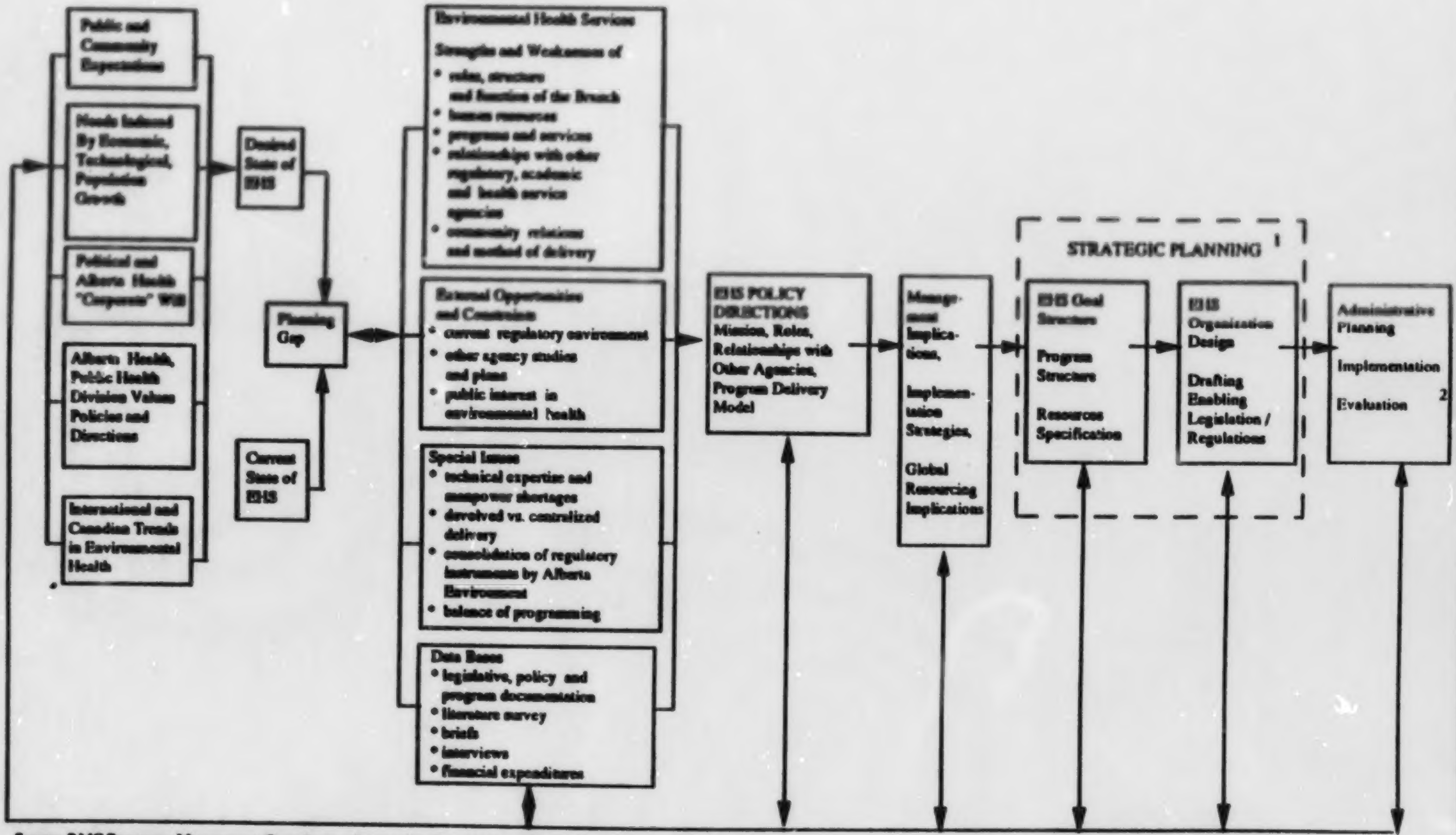
Consultations, Workshops and Seminars

Our consultations were extensive. We held over 70 interviews with a wide range of stakeholders both within the province and beyond (Appendix A). We asked for briefs in addition to interview comments according to a framework questionnaire (Appendix B). Over 30 briefs were received, including sixteen from the local health units.

EXHIBIT 2

Study Model

Environmental Health Services (EHS), Public Health Division, Alberta Health


Public and Community Expectations
Needs Induced By Economic, Technological, Population Growth
Political and Alberta Health "Corporate" Will
Alberta Health, Public Health Division Values Policies and Directions
International and Canadian Trends in Environmental Health
Desired State of EHS
Planning Gap
Current State of EHS
Environmental Health Services
Strengths and Weaknesses of
• roles, structure and function of the Branch
• human resources
• programs and services
• relationships with other regulatory, academic and health service agencies
• community relations and method of delivery
External Opportunities and Constraints
• current regulatory environment
• other agency studies and plans
• public interest in environmental health
Special Issues
• technical expertise and manpower shortages
• devolved vs. centralized delivery
• consolidation of regulatory instruments by Alberta Environment
• balance of programming
Data Bases
• legislative, policy and program documentation
• literature survey
• briefs
• interviews
• financial expenditures
EHS POLICY DIRECTIONS Mission, Roles, Relationships with Other Agencies, Program Delivery Model
Management Implications, Implementation Strategies, Global Resourcing Implications
STRATEGIC PLANNING 1
EHS Goal Structure
Program Structure
Resources Specification
EHS Organization Design
Drafting Enabling Legislation / Regulations
Administrative Planning
Implementation
Evaluation 2

Source: RMC Resources Management Consultants; Proposal to Provide Consulting Services to the Public Health Division, Alberta Health: Development of Strategic Option for Environmental Health in Alberta; April 2, 1990.

Note: 1. Follow-up work outside this engagement.
2. These three activities are also outside this engagement.

1.2 STUDY METHODS continued...

To ensure adequate opportunity for input from the local health units, the principal partners of Alberta Health with mandated responsibility for delivering environmental health services locally, we held two workshops. On July 25, 1990 in Edmonton, and July 26, 1990 on Calgary, the consulting team met in plenary and small group sessions with a total of about 80 local health unit representatives to discuss topics from briefs submitted to the study by the health units. The topics were grouped according to four themes which served as a framework for structuring workshop discussions: scope functions and mandates; developing resources; internal cooperation and coordination; and extra-sectoral cooperation. We include in Appendix C a summary of the presentations and discussions during the workshops.

We also presented two Strategic Planning Seminars to representatives of some 23 departments, boards, and agencies of government and representatives of industry associations. The first seminar focused on a review of the current state and was held September 13, 1990. The second seminar focused on minimum and wider options for the future state and was presented October 4, 1990. We include an overview of seminar topics and a summary of the presentations and discussions of the first seminar in Appendix D.

Staff of the Environmental Health Services Branch participated as observers and recorders at the workshops and seminars. One of the staff prepared the report on the proceedings of the workshops and the first seminar found in Appendices C and D.

Team Activities

The consulting team benefited from participation in two important gatherings of environmental health professionals, one near the outset of the study, the other near the end of the study. These were the

- Fourth National Health Promotion Summer School 1990, *Health and the Environment: Making the Rules*, Edmonton, June 10-15, 1990, sponsored by the Edmonton Board of Health; and the

- National Conference, *Environmental Health Issues, A Vision for the Future*, Toronto, October 17-19, 1990, sponsored by the Canadian Public Health Association, with the support of Environment Canada, the Federal Environmental Assessment Review Office/Canadian Environmental Assessment Research Council, and the Health Protection Branch, Health and Welfare Canada.

Other team activities included a review of documentation, internal analysis, ongoing meetings with the client and other tasks outlined in Exhibit 3.

EXHIBIT 3

Study Tasks

1. Initiate and Manage the Engagement
2. Assemble and Review Legislative Policy and Program Documentation
3. Identify High Priority Health Outcomes Significantly Affected by Environmental Factors
4. Finalize with Client Strategy for Stakeholder Input
5. Consult with Internal Stakeholders
6. Consult with External Stakeholders
7. Assess and Synthesize Current Status
8. Conduct Strategic Planning Seminar I: The Current State
9. Identify Environmental Health Trends and Issues
10. Formulate Strategic Options and Delivery Models
11. Conduct Strategic Planning Seminar II: The Future State
12. Formulate Recommendations and Implications
13. Prepare Draft Study Report
14. Review, Revise, Draft, Present Final Report
15. Recommend Further Planning Action

Source: **RMC Resources Management Consultants Ltd.; Proposal to Provide Consulting Services to the Public Health Division, Alberta Health: Development of Strategic Option for Environmental Health in Alberta; April 2, 1990.**

1.2 STUDY METHODS continued...

Management of the Study by the Client

The project was managed at the corporate level of Alberta Health by a Steering Committee of senior officials, including three individuals at the Assistant Deputy Minister level, two of whom were from Alberta Health and one from Alberta Environment. Day-to-day management was by a Working Committee of staff from the Environmental Health Services and Research and Planning Branches of Alberta Health.

1.3 STRUCTURE OF THIS REPORT

Overview

Our report is presented in this document, together with a second volume of supporting material. The second volume, **Supporting Inventories**, presents an inventory of environmental health services in the province provided through various government departments, boards and agencies. It also provides an initial inventory of related information systems.

We present our findings and recommendations in this main volume in six chapters. A set of appendices offers materials related directly to the main body of the report. Following this introductory chapter, we outline a contextual framework for our considerations by examining the definition and concepts of environmental health, by describing the key historic events leading to present arrangements for the delivery of environmental health services, and by making explicit the policy directions that guided our study.

In the following two chapters, we offer a situational analysis from two somewhat different perspectives. In Chapter 3 we review health problems in relation to environmental matters, then examine the structure of service delivery across government departments and within the local health units and Alberta Health. Related material on the environmental health programs is found in the second volume.

The situational analysis is continued in Chapter 4, this time organized according to some cross-cutting themes and issues, concluding with a synthesis of our views on present service delivery in Alberta relative to two sets of criteria.

Strategic Options for the future are presented in Chapter 5, organized according to an essential option, and wider options. Our recommendations for future action are found in Chapter 6, together with resource implications, requirements for further planning and concluding remarks.

2. CONTEXTUAL FRAMEWORK

Four considerations set the stage for our study: definitions and concepts of environmental health, the framework for addressing organizational relationships involved in environmental health, its past history in Alberta, and present government policy directions affecting its future delivery in the province. We discuss each of these four considerations in this chapter.

2.1 DEFINITIONS AND STUDY FOCUS

The terms of reference for this study centred primarily on environmental health policies and programs within Alberta Health. This included consideration of the role of the twenty-seven health units mandated to provide environmental health services locally. The nature of environmental health, however, compelled us to examine our subject in a much wider context, one that is beset with conceptual, semantic and organizational ambiguities. These include the definition of health itself, and within health, the definition of "environmental" health.

What is Health?

More than forty years ago the World Health Organization (WHO) captured the important and widespread notion that there is more to health than an absence of disease or injury. The classic statement in the 1947 WHO Constitution that ***Health is a state of complete physical, mental, and social well-being, and not merely the absence of disease or injury***[1] soon found its way into the language of health policy makers, but not into actual programs. Making the definition operational proved to be difficult. The concepts in the WHO definition are polar extremes: absence of negative, biological circumstances - disease and injury, contrasted with the presence of an ideal - well-being. With this definition, all policy and all programs can be subsumed under the domain of health. The definition provides little guidance for examining the problem of what constitutes environmental health, and how best to organize government responsibility for ensuring its effective delivery.

The WHO definition, still, broadened the scope of health sufficiently to permit the development of a range of meanings for health between the polar extremes. It also enabled an exploration of the relationship between health and well-being, and the determinants of health.

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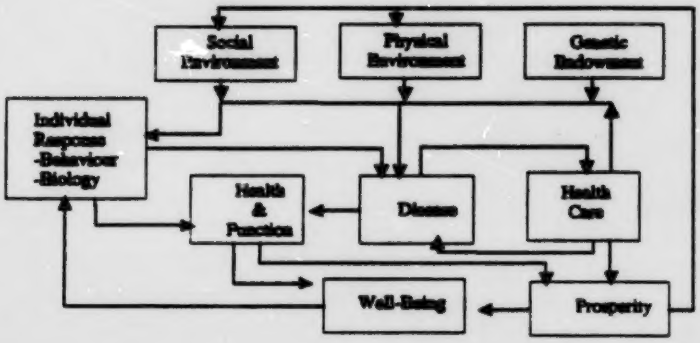
[1] Evans and Stoddart; 1990.

EXHIBIT 4

Determinants of Health, A Conceptual Framework


Social Environment
Physical Environment
Genetic Endowment
Individual Response
-Behaviour
-Biology
Health & Function
Disease
Health Care
Well-Being
Prosperity

Source: Evans and Stoddart; 1990

Evans and Stoddart recently posed a new conceptual framework for examining the determinants of health and relationships among them.[2] The framework features the following key elements (Exhibit 4):

- *A distinction between "disease" and "health and function"* - "Disease" is a concept recognized and responded to mainly by health care providers. "Health and function" is a concept that includes perceptions of illness of individuals, their families and relevant social groups.

- *Incorporation of the concept of "host response"* - "Health" is a function of individual response to factors in our social and physical environments, and is subject to the genetic endowment we inherit. Our response to environmental factors is biological and behavioral and may affect "health and function" - as perceived by individuals, and may manifest itself as a "disease" - as recognized by the health care system.

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[2] *ibid.*

2.1 DEFINITIONS AND STUDY FOCUS continued...

- *Recognition that "health" is an important, but not sole, contributor to well-being* - Economic prosperity also contributes to well-being. It can do so directly and affect our health by affecting our host response mechanisms. More prosperous people are more likely to be more healthy and respond more effectively to degraded environmental conditions. Prosperity also can affect the resources allocated to improve conditions in our social and physical environments, and thereby affect individual responses and disease states. In both cases our health is affected, and therefore, our well-being.

What is Environmental Health?

In its broadest sense, "environmental health" is concerned with the ways in which human health is affected by factors in our physical and social environments. The achievement of environmental health is a major goal of society, a goal that is reflected in the mandates of virtually all governmental entities, most economic organizations, community groups, and individuals. The breadth and diversity of Alberta government involvement in the physical aspects of environmental health are detailed in an accompanying volume to this document, **Supporting Inventories**, where the mandates of the province's political and administrative agencies are inventoried.[3]

Although this study reflects the broad conception of environmental health, it mainly focuses on relationships between people and their physical environment, including both its natural and man-made elements. Social factors relevant to this focus have been considered - for example, the role played by formal organizations, the educational process, and citizen action. However, important concerns, such as improving familial relationships or reducing crime and poverty, fall outside the scope of the study.

---

[3] Two other meanings of "environmental health" are noted: (1) the protection and enhancement of the "health" of the natural environment, and (2) the activities of environmental health units organized in government funded health agencies. These meanings are also relevant to the study. Human health benefits from a salubrious natural environment and suffers when that environment is degraded. The activities of *E*nvironmental *H*ealth units in public agencies ("E" and "H" usually capitalized) form a part - but far from the whole - of the activities that communities take to protect and enhance their own health and that of the environments in which they live and work.

2.1 DEFINITIONS AND STUDY FOCUS continued...

The central concern of the study, then, is the role and capabilities of Alberta Health, in partnership with its colleagues in the health field and in other departments of government, in protecting and promoting human health in the face of biological, chemical, and physical hazards in the environment to limit disease, to enhance health and function, and thereby, to add to individual and community well-being. This concern requires consideration of the mandates, resources, and activities of the many governmental agencies, private organizations, and individual citizens. One key to understanding environmental health is to understand the implications for health of changes in the environment itself. These matters are discussed in this section. Another key is to understand how the various intersectoral, intergovernmental, and interorganizational relationships in Alberta can and should work in the protection and promotion of human health relative to factors affecting it in our physical and social environments. A framework for addressing how these relationships should work is presented in the next section.

Human Activity and Environmental Changes Affecting Health

Alberta's physical environment is constantly undergoing changes, many of which have direct and indirect effects on human health. These include the many positive benefits of a resource-based economy that can contribute to income and the standard of living, and the perceived negative effects ranging from the depletion of life-sustaining resources, through environmentally-induced disease and disability, to outright threats to species survival. These effects are felt at all levels and settings: domestic and occupational, local and regional, and global.

Leaving aside natural events beyond human control, health states are environmentally affected by four types of human activity:

- *economic production*, at various scales of organization, whose processes of extraction, fabrication, conversion, storage, transportation, distribution, and residual disposal can help to meet human needs, but can also generate acute and chronic health hazards, as well as degrade the physical environment and destroy key elements of ecosystems;

- *alteration of the physical environment* through ***designed*** activities such as building structures, paving roadways, mining forests and other natural resources, damming and diverting surface waters, etc.;

2.1 DEFINITIONS AND STUDY FOCUS continued...

- *individual functioning*, particularly with respect to reproductive decisions, consumption and resource demands, energy use, transportation practices, the disposal of biological and product wastes, and personal capabilities to take health protective measures;

- *accidents and misadventures*, which can negatively affect health at all levels from individual injury to regional disasters.

The way in which these types of activity and their environmental consequences affect human health can be understood in terms of two models, both from systems analysis. One model deals with the impact of environmental disturbances on human biology. The other, with the interaction of a wider range of determinants of human health.

The Impact of Environmental Disturbances on Human Biology

The biosphere is rich in complex, natural and man made economic systems. Together they can be termed "environmental" systems. These systems may be thought of as cycles that carry out the following activities: (1) storing resources in a pool; (2) extracting and recovering them; (3) distributing and transporting the resources; (4) transforming them to produce other substances; (5) decomposing and metabolizing the produced substances; (6) then recycling and disposing them back into the resource pool (Exhibit 5, p 14)[4]. Natural cycles remain stable over the long term, avoiding over accumulation of their products through adequate feedback and the existence of sufficient capacity. Human activity may perturb the stability of environmental cycles. This may happen by over production - beyond the capacity of the cycle, or by production of substances that are new to the system and destabling because of their biological, chemical, or physical characteristics.

Guidotti and Conway define pollution in relation to environmental systems as follows:

> *From the standpoint of public health, the definition of pollution may be taken as the production of a substance in quantities in excess of the natural cycle's ability to assimilate or convert the excess, such that accumulation occurs and a biological response results.*[5]

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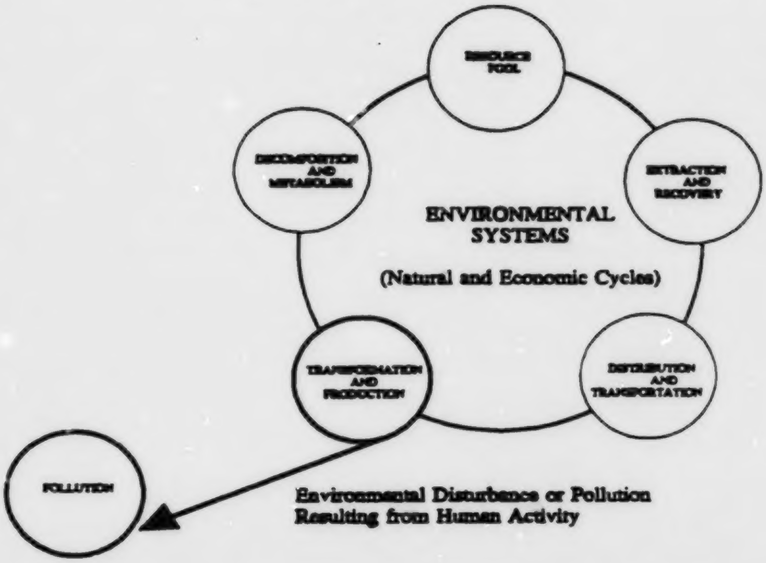
[4] Guidotti and Conway; 1990.

[5] *ibid.*

2.1 DEFINITIONS AND STUDY FOCUS continued...

EXHIBIT 5

Environmental Systems and Disturbances


RESOURCE POOL
EXTRACTION AND RECOVERY
ENVIRONMENTAL SYSTEMS
(Natural and Economic Cycles)
DISTRIBUTION AND TRANSPORTATION
TRANSFORMATION AND PRODUCTION
DECOMPOSITION AND METABOLISM
POLLUTION
Environmental Disturbance or Pollution Resulting from Human Activity

Source: After Guidotti and Conway; 1990

Risk to health from exposure cannot be understood in isolation. A thorough understanding of at least three areas is necessary:

> *The action of the agent on the body (its physical, chemical, and biological effects),*
>
> *The adaptive or defensive reactions of the individual exposed (host defenses and homeostatic mechanisms), and*
>
> *The behaviour and transformation of the agent in the environment (transport, concentration, degradation).*[6]

---

[6] *ibid.*

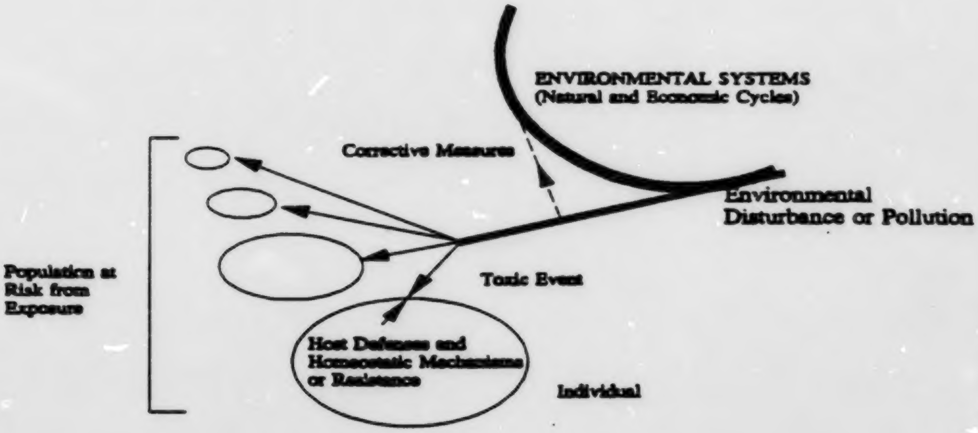
2.1 DEFINITIONS AND STUDY FOCUS continued...

A model relating environmental disturbances with the disciplines relevant to environmental health sciences is offered by Guidotti and Conway (Exhibits 6,7). By identifying the relevant disciplines, it also provides an indication of the intellectual resources that must be available to an environmental health service.

The impact of environmental disturbances (pollution) is distributed unequally over a population at risk (different sizes of ellipses, Exhibit 6). Individuals exposed to the disturbance are subject to potential toxic effects. Responses to these effects will differ depending on the strength of resistance and defensive mechanisms of each individual's biology and physiology. The essential scientific disciplines of environmental health follow from the model (Exhibit 7, p 16). They are (1) epidemiology (2) physiology (3) environmental health biology (4) clinical medicine (5) toxicology (6) environmental health engineering (7) environmental monitoring (8) industrial hygiene.

EXHIBIT 6

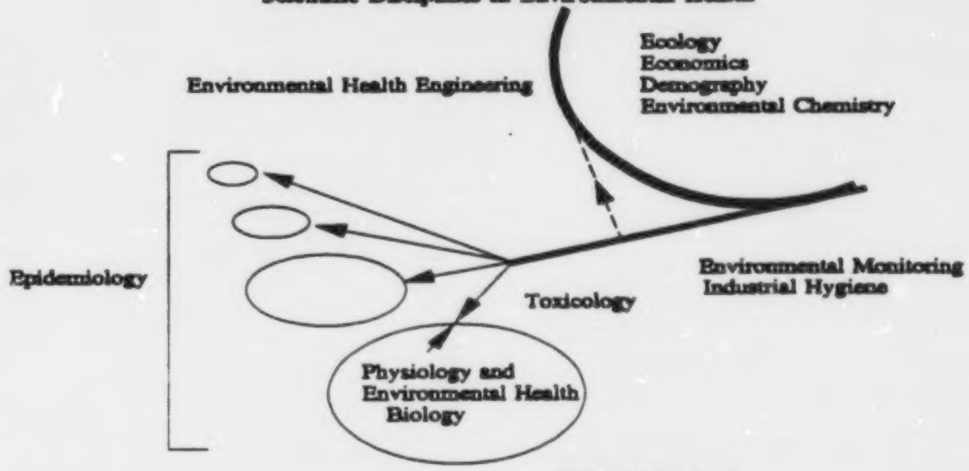
Unequal Distribution of the Impact of an Environmental Disturbance


ENVIRONMENTAL SYSTEMS
(Natural and Bioeconomic Cycles)
Corrective Measures
Environmental
Disturbance or Pollution
Population at
Risk from
Exposure
Toxic Event
Host Defenses and
Homeostatic Mechanisms
or Resistance
Individual

Source: Guidotti and Conway; 1990

EXHIBIT 7

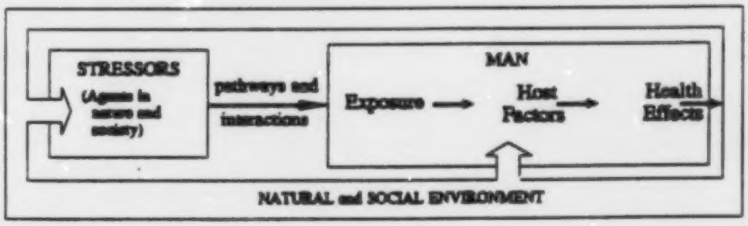
Scientific Disciplines in Environmental Health


Environmental Health Engineering
Ecology
Economics
Demography
Environmental Chemistry
Epidemiology
Environmental Monitoring
Industrial Hygiene
Toxicology
Physiology and Environmental Health Biology
Clinical Medicine

Source: Guidotti and Conway; 1990

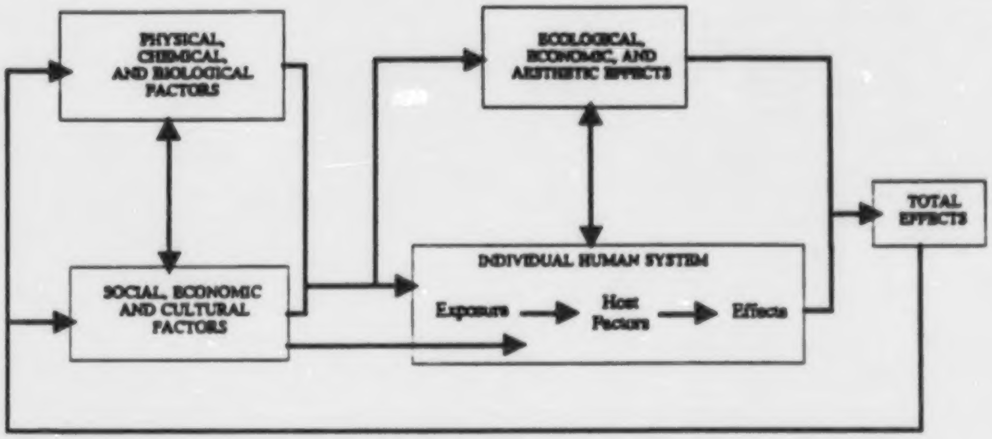
EXHIBIT 8

General Relationships in Environmental Health


STRESSORS
(Agents in nature and society)
pathways and interactions
MAN
Exposure
Host Factors
Health Effects
NATURAL and SOCIAL ENVIRONMENT

Source: Schaeffer, 1974; p.67

EXHIBIT 9
Major Conceptual Subsystems of an Environmental Health System


PHYSICAL, CHEMICAL, AND BIOLOGICAL FACTORS
ECOLOGICAL, ECONOMIC, AND AESTHETIC EFFECTS
TOTAL EFFECTS
INDIVIDUAL HUMAN SYSTEM
SOCIAL, ECONOMIC AND CULTURAL FACTORS
Exposure
Host Factors
Effects

Source: Schaeffer, 1974; p. 68

A Systems Model of Environmental Health

The previous model focuses on impacts of environmental disturbances on human biology. A wider definition of health requires the explicit inclusion of health and function and the social as well as physical environments that also are determinants of health (Exhibit 4). The second model by Schaefer more directly does so (Exhibit 8, 9)[7].

We function in a natural and a social environment that contains agents that affect our health in its wider definition. The agents are biological, chemical, physical or social factors that induce stress. Such stress-inducers, or "stressors", may affect our health as they reach us through direct exposure, or indirectly through various media, eg. water, food, air, jobs, television (Exhibit 8).

---

[7] Schaefer; 1974.

2.1 DEFINITIONS AND STUDY FOCUS continued...

As in the Guidotti and Conway model, the concept of "host factors" - the relative resistance, susceptibility or adaptability to environmental agents, is included. However, Schaefer's model extends the concept to recognize that sociocultural as well as biological differences among humans cause individuals to experience different effects upon exposure to the same stressor. The conceptual features of the Schaefer model of an environmental health system reflect the Evans and Stoddart determinants of health, either explicitly or implicitly (Exhibits 4, 9, pp 10 and 17 respectively).

Implications for Environmental Health

Our earlier explanation that "environmental health" is concerned with the ways in which human health is affected by factors in our physical and social environments, is enriched by the models of Evans and Stoddart, Guidotti and Conway, and Schaefer. We draw a number of implications these models have for environmental health in Alberta.

- Environmental health at Alberta Health and the health unit must concern itself with the wider definition of health, and therefore, take into consideration the determinants of health as presented by Evans and Stoddart (Exhibit 4, p 10).

- In particular, it must concern itself with social as well as physical environments and our response to them.

- An environmental health service must access and make use of the knowledge of a wide range of disciplines: epidemiology, toxicology, environmental engineering, industrial hygiene (occupational health) and others identified by Guidotti and Conway (Exhibit 7, p 16).

- An environmental health service must also, however, access and make use of the knowledge of disciplines concerned with the impact of social environments on human health and well-being, the social sciences: for example, psychology, sociology, economics, and the spectrum of management sciences and their techniques.

- Since corrective measures to limit the effects of harmful social environments are limited by democratic values and principles, the areas of social policy development - for example to ensure healthy public policies and healthy communities, and to limit smoking. Health promotion particularly must assume special importance in relation to environmental health, as must the application of communication theory to persuade rather than coerce positive lifestyle choices.

2.1 DEFINITIONS AND STUDY FOCUS continued...

- Since disturbances in environmental systems by definition include disturbances in economic cycles, the issues of economic development and environmental health are interrelated. The range and extent of stressors in social and physical environments induced by economic development, and the pathways these stressors take to reach humans require monitoring and understanding. Environmental health, therefore, must be concerned with environmental impact assessment. It also must be conversant with approaches that seek to limit impacts on environmental systems, for example, sustainable development.

Health and Sustainable Development

The public health community has been increasingly concerned over the past 30 years with improving the relationship of socioeconomic development to meet the requirements for human health - with making development more humane. At the same time, their understanding and knowledge of how biological, chemical, and physical hazards affect human health have increased. While many gaps in scientific understanding and technological capability remain the knowledge base has grown much faster than the capabilities of countries and communities for protecting and promoting health. Many deep rooted political, economic, social, and administrative issues also remain to be resolved within and among countries. A key requirement for health protection and promotion is a better understanding of the complex, interrelated systems of activity that, on the one hand, produce health hazards, and, on the other, hold the potential to control them.

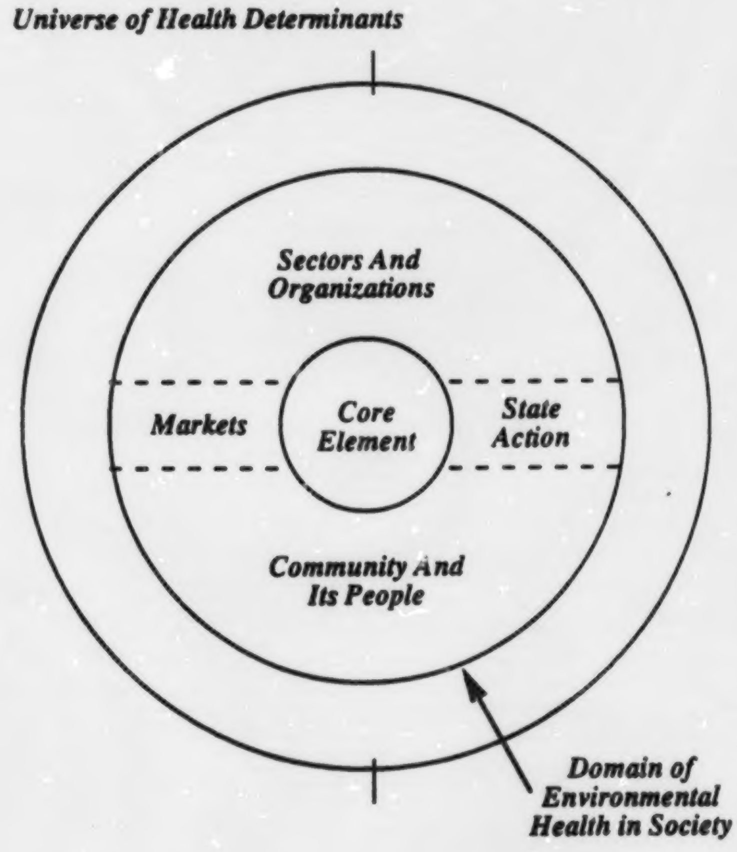
In every part of the world, governments and international agencies have become increasingly committed to improving the capacity of health authorities at local and national levels to more effectively respond to contemporary needs to protect health against environmental hazards and to promote health by improving environmental conditions.

Our Common Future, the 1987 report of the World Commission on Environment and Development (WCED), identified the key environmental factors, trends, which contribute to the undermining of human well-being. The WCED cited continuing increases in population, urbanization, industrialization, and energy use, along with the destruction of ecosystems and their species as factors of critical concern, and noted the problems of sustaining the world's potential for food security. Countries, organizations, and individuals were urged to undertake policies of "sustainable development" that would limit demands upon resources, replace resources, and control the generation and disposal of harmful residuals of production and consumption. These were seen as essential measures for raising or sustaining the quality of life and ensure the survival of future generations.

EXHIBIT 10

A Spherical Model:

Modulation Of Human Activity In The Interest Of Community Health


Universe of Health Determinants
Sectors And Organizations
Markets
Core Element
State Action
Community And Its People
Domain of Environmental Health in Society

Source: Morris Schaefer, 1990

2.1 DEFINITIONS AND STUDY FOCUS continued...

The Province of Alberta has in many respects been a leader for the past 50 years or more in recognizing and respecting the principles of sustainable development. The original Public Health Act of 1907, which created an effective sanitation and health protection system based on a partnership between the Provincial Government and local boards of health, underlies a positive record of achievement in environmental health over the last 83 years. The Alberta Research Council (established in 1921) and the Energy Resources Conservation Board (established in 1938) are two examples of a commitment to responsible resource management backed up by the best available scientific research and engineering expertise. The challenge now is to better address changes in the array of health hazards that development has brought.

2.2 A FRAMEWORK FOR ADDRESSING ORGANIZATIONAL RELATIONSHIPS

We now turn to the matter of understanding how the various intersectoral, intergovernmental, inter- and intra-organizational relationships in Alberta should work in the protection and promotion of human health relative to factors affecting it in our physical and social environment.

Modulating Human Activity and Community Health

Since the dawn of history, civil and religious authorities have established norms and exercised sanctions to protect their people and their shared environment against abuse and hazards. In smaller communities using relatively simple technologies, such measures could be specific and closely enforced. The complexity of contemporary societies and the rapidity of their technological and demographic changes now require such defense to be more comprehensive, more integrated, and more penetrating. The biosphere is a relatively "closed" system, one that cannot tolerate the kind of limitless, unregulated expansion that is characteristic of the "open" system of human societies.

In considering how human activities are and might be modulated in the interest of community health, it is useful to consider a model such as that depicted in Exhibit 10. (The boundaries displayed may be depicted with a greater degree of irregularity and permeability.) There are two hemispheres in the model. The one representing *Sectors and Organizations* identifies agencies and enterprises that are formally constituted and of a size that permits most economic activity to be addressed. The other, representing the *Community and Its People* is made up of informal and small (including individual) entities, whose aggregate choices and behaviours impact the environment massively. Activities in both hemispheres have to be modulated to optimize their impacts on environmental and health conditions.

2.2 A FRAMEWORK FOR ADDRESSING ORGANIZATIONAL RELATIONSHIPS continued...

In most societies, the major mechanisms for modulation are *Markets* and *State Action*. The first consists of the making of free choices within the formal and informal limits that communities establish. The second, *State Action*, consists of formally established norms and sanctions exercised by governments; in consensual societies, the tone and content of such norms and sanctions are informed and formed by popular values and concerns, interacting with scientific and technical knowledge.

For this sprawling and complex system to fulfill its function of protecting and enhancing community health, the model allows for a *Core Element* (in systems terminology, a control component) to monitor the situation and guide adaptive actions. In all but primitive communities, the domains and specializations historically involved in relevant control activities make this *Core Element* a complex subsystem in itself. The government authorities customarily and implicitly involved are those responsible for public health, environmental protection, worker safety and judicial enforcement. In addition, those authorities responsible for land and water allocations, food production, and disaster responses may play a significant role. In most developed countries, university elements and non-governmental interest groups often make critical contributions to the *Core Element*, defining problems and values, mobilizing popular opinion, and serving as community advocates.

Strengthening Partnerships at the Core

Many countries have tried to solve the puzzle of how such a complex subsystem can be properly composed and what processes might be most productively used. Initial designs are often revised, in response to changes in situations, perceptions, and concerns. The role of public health authorities in the *Core Element* is frequently at issue - not infrequently because those authorities have had inadequate interest and capabilities to fulfill their implicit responsibilities.

The key to the puzzle in some societies is to reconsider government's role in bringing about an environment that is promotive and protective of human health - perhaps to rethink the whole issue in the face of ecological and social changes. As pressures on the environment increase, as technology advances and becomes more difficult to control, as activities become more dispersed and specialized, the traditional functions of governmental monitoring and regulation may not suffice. More active participation by economic and social organizations, as well as by individuals, in environmental protection and improvement is seen as increasingly important. This being the case, Governments

2.2 A FRAMEWORK FOR ADDRESSING ORGANIZATIONAL RELATIONSHIPS continued...

may have to raise to central prominence functions that have traditionally been regarded as marginal or peripheral. Mobilizing civic cooperation, encouraging self-regulation, and enabling and empowering people and organizations to act in the public interest are now seen as a central part of the strategy. This would not only supplement government's traditional role, but would transform it.

The seeds of such a transformation have already sprouted in the many voluntary groups now concerned with a healthy environment and actively advocating measures to ensure it. It is for government to learn or relearn the skills of working with people, as well as for them.

Public Health Functions in Environmental Health

The accepted role of health authorities derives, in the first instance, from their legislated mission and responsibility for protecting and enhancing the health of the public. In most communities, basic or organic legislation gives them strong powers - sometimes enumerated, sometimes general - to identify threats to community health and to intervene to reduce such threats.

In response to the threats and challenges to health as a result of environmental changes, the Pan American Health Organization[8] in September 1990 recognized both leadership and advisory roles and endorsed the following restatement of **health authority functions in environmental health**.

1. *Advocate preventive measures* to protect the public's health, by representing health considerations in the formulation of public policy, increasing public awareness of environmental health issues, and otherwise encouraging behaviours and environmental modifications with positive health impacts.

2. *Improve community capacity to foster environmental health*, by strengthening the ability of local authorities to carry out decentralized functions and fostering community self-help programmes and family skills.

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[8] Pan American Health Organization; April 1990.

2.2 A FRAMEWORK FOR ADDRESSING ORGANIZATIONAL RELATIONSHIPS continued...

3. *Carry out health impact and risk assessments*, identifying threats to health from existing environmental practices and conditions and from proposed changes relating to shelter, occupation, industrial processes, energy generation, water resources, etc.

4. *Conduct epidemiological surveillance of environment-related diseases*, informing decision-makers and the public about the situation and trends in the health states of communities and populations with respect to health hazards.

5. *Train personnel to identify and prevent environmental health hazards*, including public health and medical staffs, personnel in such other sectors as agriculture and labour whose duties enable them to affect safety conditions and the use of chemicals, and community-based auxiliaries and volunteers.

6. *Manage and operate environmental control programmes assigned to the health authority* and take initiatives to improve intersectoral cooperation/coordination at different decision-making levels, promoting multi-media, holistic approaches.

7. *Develop and implement emergency response capabilities* for natural disasters and accidents.

8. *Participate in the development of norms, standards, and legislation*, providing necessary scientific and technical information, advisory resources, and assistance to legislative and administrative leaders in the drafting and review of proposals.

9. *Assist in environmental impact assessments*, providing information on health aspects of proposed environmental changes and participating in the oversight of implementation.

10. *Conduct environmental data assessments*, interpreting the health implications of environmental monitoring data collected routinely or through special studies.

11. *Participate in intersectoral cooperation between public health and economic development authorities*, emphasizing the prevention of environmental hazards arising from development projects in various sectors, as well as promoting grass-roots capabilities for social development and environmental improvement.

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2.2 A FRAMEWORK FOR ADDRESSING ORGANIZATIONAL RELATIONSHIPS continued...

The first seven of these are considered direct roles for a health authority, the last four are collaborative roles requiring intersectoral cooperation. For example, a health authority would be expected to take a leadership role regarding *health impacts and risk assessments* (function 3), and an advisory, collaborative role in *environmental impact assessments* (function 9), to help interpret results from a health perspective.

Differing jurisdictional arrangements at the level of central government and local authorities only increase the need for cooperation and coordination among the various sectors. This is particularly true in the case of jurisdictions with a central authority responsible for public safety; with autonomous post-secondary institutions under the general jurisdiction of a ministry of advanced education; and with local public health authorities responsible for environmental health service delivery under the general jurisdiction of a Ministry of Health.

Alberta Health Corporate Functions and Environmental Health

Towards the end of 1990 Alberta Health concluded the process of establishing a corporate function model. The model underpins the Health Information Processing Strategy (HIPS) Implementation Plan. The corporate function model identifies seven functions that illustrate the work of Alberta Health. A parallel accomplishment is the formulation of a functional model for Alberta health units as part of the process of developing an Information Technology Strategic Plan (ITSP). While the ITSP is "owned" by the Health Units it is recognized that the ITSP is a subset of HIPS. The seven corporate functions of Alberta Health in HIPS therefore have relevancy to the provision of environmental health services by the Public Health Division and by the Alberta health units.

The following seven corporate functions and their elaboration in areas particularly relevant to environmental health, therefore offer an additional context for reviewing present services.[9]

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[9] The seven functions that follow are based on internal draft reports for or by Alberta Health, Information Technology Division provided to RMC in December 1990.

2.2 A FRAMEWORK FOR ADDRESSING ORGANIZATIONAL RELATIONSHIPS continued...

1. ***Assess Health Status**: Determine the health status of Albertans. Health status encompasses the physical, mental, spiritual and social well-being of the individual, the family, and the community.*

   This function applies the wider definition of health, and indirectly, requires definition of the domain of environmental health. It also involves specifying target populations whose health is to be studied and improved, and identifying determinants of health that can be modified to improve the health of Albertans. Determining health status indicators, measuring health status and analyzing changes in status are other activities associated with this function.

2. ***Set Health Goals**: Establish the health goals for the health system.*

   An environmental health service must set goals that are measurable targets for determining progress achieved in meeting health needs. Activities involved in this function include determining needs, assessing opportunities and constraints, developing goals, ranking them and gaining acceptance for the goals.

3. ***Formulate Strategic Directions & Delivery Options**: Determine the strategic directions and delivery options necessary to achieve health goals. This function operates at both a high level (strategic directions) and a low level (delivery options); regardless of the 'data' being acted upon, the function remains identical.*

   Activities of this function include identifying requirements and alternative ways to meet them, assessing and recommending specific alternatives, and acquiring acceptance and approval to proceed.

4. ***Provide Health Services**: Set standards and implement a delivery plan for the provision of a health services. This is planning and implementation from a very low level, as it would be seen from the provider's point of view regarding a specific services.*

   Activities of this function, particularly in relation to the health units, include developing delivery plans, delivering services, and supporting their delivery.

2.2 A FRAMEWORK FOR ADDRESSING ORGANIZATIONAL RELATIONSHIPS continued...

5. ***Communicate With Stakeholders**: This function encompasses the dialogue (written or spoken) between the health service delivery system and the stakeholder.*

   Activities of this function include consulting with and receiving input from the health units, other departments, and targeted populations through appropriate media and methods. Communicating information on hazards and risks, and ensuring appropriate involvement with socioeconomic impact assessment emerge as areas of special relevance to an environmental health service.

6. ***Manage Resources**: Organize and control the resources required to operate the health delivery system. These include human, monetary, facility, equipment, information, material and supply resources.*

   Activities of this function are particularly relevant to the level of the Public Health Division of Alberta Health, and to the Health Units. They include identifying resource requirements, building infrastructure, acquiring resources, distributing and maintaining them.

7. ***Evaluate the Health Systems**: A rigorous analysis to determine whether goals, strategic directions, delivery options, programs, and service are appropriate, effective, efficient and responsive to individual, family and community needs.*

   Evaluation of the environmental health system requires specifying expectations and issues of communities and their health units. This requires establishing measurement criteria, analyzing results, and drawing conclusions and making decisions.

2.3 HISTORICAL CONTEXT

Building on Strengths and Success

The Province of Alberta has achieved acknowledged success in putting in place effective measures for health and environmental protection and for resource conservation. It has done so while fostering a business climate in which sustained economic growth and development can flourish. Healthy public policy is above all, a matter of balance, cooperation and coordination. The problems that Albertans must confront in moving towards the next century are multi-dimensional and require a deliberate effort at coordinating action on a variety of fronts.

2.3 HISTORICAL CONTEXT continued...

Much of what Alberta needs is already in place and is functioning well. But, an examination of the present situation suggests that there is a definite need to adopt a more collaborative approach to the organization and delivery of environmental health services in Alberta. There is a need to strengthen province-wide abilities to respond to human health concerns on the basis of credible expertise, sound information and scientific understanding.

The first step is to build on strengths and successes, and to understand the present dynamics and arrangements for the delivery of environmental health services in their historical context.

Local Delivery, Supporting Expertise at the Core

The proclamation of the Public Health Act in 1907 laid the cornerstone for the present public health system in Alberta. The Premier's Commission on Future Health Care for Albertans documents the development of the system in the following words:

> *Public health services had been available in Edmonton and Calgary since the 1880s and 1890s. Medical Officers of Health were responsible for public hygiene and control of epidemics. Dairy inspection was carried out in the cities. Edmonton required all children to be immunized against smallpox by 1908, a practice which became province-wide in 1915. A provincial system of 10 health districts was established in 1907. However, public health outside the two major cities left much to be desired, hence the need for a rural program. By 1960, 93% of the population was covered by public health districts.*[10]

At their outset, the role of the local public health authorities was to deliver programs aimed at controlling environmental factors seen as contributing to the spread of communicable disease.

In support of the ten district health units established in 1907, the government also established a Provincial Laboratory of Public Health in the same year to provide microbiology, chemistry and pathology services. It was located in the Terrace Building in Edmonton. Interestingly, the Laboratory was placed under the jurisdiction of the Department of Agriculture. Responsibility for the Laboratory shifted several times, to the University of Alberta in 1908, to the Departments of the Provincial Secretary and of Municipal Affairs in the period 1917-1919, and eventually to a newly established Department of Public Health in 1919.

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[10] Premier's Commission on future Health Care for Albertans; 1989; p. 53.

2.3 HISTORICAL CONTEXT continued...

The initial configuration of the system for environmental health was logical, *local delivery of services, supporting expertise at the core* - the core serving a control function, in systems terminology, as in the Spherical Model of Exhibit 10. It set the pattern and context for present arrangements. The shifting responsibility for key expert resources at the provincial level, evidenced by the early history of the Provincial Laboratory of Public Health, unfortunately foreshadowed future problems at the provincial core for public health and its environmental health function.

Specialization and Fragmentation

The events and decisions of 1971, at the time of creation of the new Department of the Environment, set the stage for a series of events which, while understandable in the context, severely compromised the ability of the health sector to respond to environmental concerns.

Prior to 1971, the Department of Health was responsible for all government departments and agencies with major interests in environmental health matters. The focus of responsibility was the Division of Sanitary Engineering, comprising twenty to thirty professional and technical staff.

Concurrently with the establishment of the Department of the Environment, there ensued a specialization and transfer of function and of staff away from Health. The unintended result was a fragmentation of existing environmental health services and their human health orientation.

All but six of the staff of the Department of Sanitary Engineering were transferred to other departments. Subsequently three of the six were discharged, leaving a director, a public health inspector, and an enforcement officer to provide expert advisory services to the local health units from the Department of Health.

The transferred staff went to the new Department of Environment (pollution control staff) and to Labour (occupational health and safety staff). Responsibility for private sewage disposal systems was transferred to the Plumbing Branch of the Department of Labour, and a laboratory function (the Provincial Analyst) went to Agriculture.

2.3 HISTORICAL CONTEXT continued...

The transfers affecting Health were not unique to Alberta. Comparable events occurred during the early 1970s at the federal level and in other provinces, for example, in Ontario. To responde to a growing public consciousness about the environment governments established ministries and departments of the environment. In an attempt to minimize perceived duplication, and in the absence of the wider understanding that would emerge later about links between health and the environment, decisions were made to transfer health staff to various departments. While the decisions were made in good faith, their impacts on Health and on the abilities of governments to deal with the link between human health and the environment were, nevertheless, negative and severe.

Government departments in Alberta that gained from the transfers subsequently nurtured their newly acquired centres of expertise and refocussed them to their particular mandates. The single window of responsibility at the provincial core for providing advice to the local health units was shattered, its fragments scattered, its perspective on human health lost.

Reconsidering the Needs of the Core

Personal links between field inspectors in the local health units and staff transferred away from Health to other departments were sufficient, for a period of time, to maintain a flow of expert advice from the provincial level to the field. Without a clear definition of relative roles among the various groups involved in environmental health, with no redefinition of purpose for the staff remaining in Health (which by 1977 was located in the Health Inspection Service of Alberta Social Services and Community Health), conflicting agendas emerged among Health, Environment, Agriculture, and Labour. At the delivery level, local health units expressed dissatisfaction with the lack of expert support available to them at their provincial core, the Health Inspection Service.

The matter of Health's role in environmental health matters was reconsidered in a study by a working group chaired by J.W. Grainge in November 1977. This study was commissioned by the Director of Local Health Services, Alberta Social Services and Community Health. Its recommendations formed the basis for the present Environmental Health Services Branch of Alberta Health. Recommendations of the Grainge Report included:

- renaming the Health Inspection Service to "Environmental Health Services";
- designating the role of the new service to be the provision of advice, education and liaison services to local health units in the field of environmental health;

2.3 HISTORICAL CONTEXT continued...

- implementing an organization that would consist of a director, five specialists and one or two inspectors, with specialist expertise to cover
    - coordination,
    - field education,
    - enforcement and regulation,
    - engineering sciences,
    - microbiology and food control.

The need for adequate qualifications and salary for the specialists and supporting technologists were additional concerns addressed in the Report.

Partial implementation of the Grainge Report followed, with the establishment of the present form of the Environmental Health Services Branch. The "one or two" health inspector positions recommended, however, were never given to the Branch.

The Grainge Report took a small step to re-establish health capabilities at the provincial core. The step taken, however, reflected the needs of the 1970's, and focused largely on controlling biological hazards to human health.

Unfinished Business

By 1986 concerns about the environment triggered by local and international incidents were well entrenched in the public consciousness of Alberta: the Lodgepole incident, pipeline ruptures, hazardous waste transportation and disposal, herbicide and pesticide use, the disastrous incidents at Mississauga, Three Mile Island, Bhopal, and other events and issues were current topics. The problems of who was responsible for what in environmental health resurfaced again with added force. Questions were asked as to what expertise was available to support the local health units to respond to public concerns in this increasingly visible field.

Exactly one month before the Chernobyl disaster, on March 26, 1986, Mr. Calvin Lee submitted a report on jurisdictional considerations regarding environmental health within the Alberta government. The report, which was commissioned by Executive Council, identified ***ten*** government departments and agencies undertaking ***eighteen*** program functions and associated duties relative to environmental health.

EXHIBIT 11

Recommendations of the Calvin Lee Report

1. ... the Community Health Division of Alberta Social Services and Community Health be mandated to develop a consolidated specialist, support service capability in environmental health matters, with a lead role responsibility in the following program and administrative functions: risk assessment; information development and collation; research, surveys and studies; data syntheses and analyses; public communication, advice and education; consultant - advisory services to other Alberta jurisdictions and to local health authorities; federal-provincial and external relations; and coordination of interjurisdictional activity between Alberta departments and agencies.

2. ... (within the existing Alberta Government ministry configurations) authorities and programs be retained within their current jurisdictions, but that officials of these departments and agencies be directed to consult and coordinate with Alberta Community Health relative to environmental health matters which surface within their responsibility.

3. ... Alberta Community Health be authorized to identify and, upon Ministerial and Treasury Board review and approval, obtain further resources to support an expanded specialist, support service mandate in environmental health.

4. ... assuming the continuation of a multi-jurisdictional involvement in environmental health, a standing Officials Committee on Environmental Health be established to provide necessary coordination with respect to environmental health matters. The following terms of reference and procedures are proposed:

    - The Committee would be chaired by the senior official designated within the Community Health Division of Alberta Social Services and Community Health to direct an expanded Environmental Health unit;

    - Membership would consist of those senior Provincial officials most directly involved in environmental health matters. At a minimum this should include Community Health, Environment, Energy and Natural Resources, Occupational Health and Safety, Agriculture, Labour, and Public Safety Services;

    - The Committee would meet regularly four times a year and as required at the call of the chair;

    - The Committee would examine matters and issues of interjurisdictional concern relative to environmental health, especially those areas which may require coordination of planning or administration between departments and agencies.

Source: Calvin E. Lee; 1986.

2.3 HISTORICAL CONTEXT continued...

The principal findings in Calvin Lee's report warrant the following lengthy quotation:

> *Although all of the* [ten] *Alberta departments and agencies referenced above as participating in environmental health matters do perform certain functions in this area* [the eighteen program functions and associated duties], *the extent of their activity will vary. In fact, in many cases, attention to human health effects assumes a secondary place in the mandate of the organization. Consequently, few resources have been dedicated solely to environmental health matters within Alberta jurisdictions. In those cases where activity is required, resources and advice have generally been assigned in a project manner from within or obtained from external sources - consultants, officials of other agencies, utilization of information and standards developed in other jurisdictions.*
>
> *The consensus of Alberta officials is that a gap does exist in Alberta in certain environmental health functions and that they do encounter difficulties in accessing and applying resources for many of those program functions referenced on pages 3 and 4. In addition, none of the jurisdictions outside Community Health view their primary mandate to be that of environmental health and would tend to look to Community Health as the logical jurisdiction to assume a more central, coordinative and visible role in the area.*[11]

Four recommendations were made by Mr. Lee. They are listed in detail in Exhibit 11. Essentially, the report recommended that (1) Health take a specialized, lead role in environmental health matters; (2) the existing pattern of authorities and programs in government continue in consultation with Health; (3) added resources be given to Health to support its mandate; and (4) a standing interdepartmental committee on environmental health matters chaired by Health be established to provide necessary coordination.

As direct and logical as these recommendations were, provincial budget constraints and subsequent cuts in proposed expenditures overshadowed the report. The 1986 recommendations were taken to the point of developing a Request for Decision (RFD) to Cabinet but they were never acted upon.

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[11] Lee; 1986

2.3 HISTORICAL CONTEXT continued...

Administrative Uncertainty at the Provincial Core

The shifting undercurrents exemplified by the changing responsibility for the Provincial Laboratory of Public Health in the first part of this century still haunt the Public Health Division and its Environmental Health Services Branch.

The 1980s saw increased public awareness of the environment and the ecosystem of the world. The increasing costs of diagnostic and treatment oriented, institutional-based health care also attracted attention by economists and a growing segment of political opinion. In a period of changing priorities and perceptions the Public Health Division had difficulty finding a jurisdictional home and committed political sponsorship. Responsibility for this Division moved in the course of several government reorganizations, from Social Service and Community Health to Community and Occupational Health, and in 1988, to a newly mandated Alberta Health.

The moves among Ministerial portfolios also included changes in Deputy and Assistant Deputy Ministers. These senior officials varied in their awareness of environmental health matters. The Environmental Health Services Branch, therefore, faced a stream of changes in top leadership and administration, in addition to changes within the Branch itself. Consequently, the Branch lacked sustained advocacy at the top level to develop its resources for responding to ongoing needs for service and adapting to new demands.

The local health units, in the meantime, continued to face local pressure for services, encountering new problems. Biological hazards continued to present a threat, but their effects were kept at bay by local control programs. Increasingly, the local public health inspectors were confronted with problems of chemical and physical hazards in the environment. Health inspectors had to deal with these new hazards to human health and respond to questions from the public about them. The expert support from the Environmental Health Services Branch at the provincial core, however appropriate and competent when obtained, was often unavailable. Branch staff, preoccupied with their own uncertainties in terms of management and role, experienced internal tensions and demoralization.

2.3 HISTORICAL CONTEXT continued...

Expert technical strengths and resources at the provincial level grew throughout the 1980s in various other government departments and agencies. By the end of the decade, notwithstanding the lack of understanding and support from within Alberta Health, environmental health began to emerge as an increasingly complex and publicized area of concern. The three key observations made by Mr. Calvin Lee in his report remained valid: (1) human health effects assumed a secondary place in the mandate of organizations other than Health; (2) few resources were dedicated solely to environmental health matters; (3) difficulties existed in accessing and applying resources for many environmental health functions.

Lessons from The Historical Context

In terms of the Spherical Model (Exhibit 10, p 20), partnerships and coordination at the Alberta core were weak, largely *ad hoc* and lacked a substantive human health perspective. The strengths available at the provincial level for dealing with environmental health matters were not being marshalled coherently, yet public demand for coherent response with a human health focus was mounting.

The successes in environmental health achieved in the 1980s were largely in the realm of biological hazards. That any achievements occurred in new areas involving chemical and physical hazards was mainly as a result of individual effort and commitment, rather than as a result of targeted institutional objectives. By the end of the decade, both the Environmental Health Services Branch in Alberta Health, and the health units were still concerned about the same problems as in 1971, when the former single focus for Health was fragmented. The logical arrangement of *local delivery*, supported by direction and *expertise at the core* was not working effectively because the core was unable to fulfill its obligations to the field. The resources available to both the field and the Branch had not grown to keep pace with service demands. The provincial system for delivery of services had an unclear view of what environmental health was.

By 1991, the Branch faced the need not only to provide expert support to the field, but also to its own Minister and department. The relatively small Branch role in 1971 of responding to "action requests" from the Minister and the Department had grown significantly. The Branch was now responding to 400 requests per year on issues about human health impacts of the environment. In addition, the Branch faced new demands for addressing the long term chronic impacts of industrialization. Concurrently, the field was contending with the impacts of a more than 50% increase in population over the previous two decades, an even greater increase in the numbers of regulated facilities and their sophistication, and increased public awareness and concerns at the local level about the health-environment link.

2.4 POLICY DIRECTIONS GUIDING THE STUDY

Ministerial Directions

In her 1990-91 budget address, the Minister of Health announced that she had adopted four guiding principles in carrying out her role. These four principles (Exhibit 12) were adopted as the main set of policy directions for guiding this study. These principles involve (1) the adoption of a wider definition of Health; (2) the application of the concept of accountability; (3) the incorporation of health promotion and disease prevention into all health services; and (4) the integral link between our health and our environment.

As reflected earlier in this chapter, the Minister's **wider definition of health** and its focus on Albertans is particularly important. Our study explicitly recognizes health as a resource not an objective of living, that includes mental, social and spiritual well-being in addition to physical well-being.

Accountability and the requirement for an outcome orientation in the development of health programs guided our thinking, as reflected in the next chapter. The essential meaning of accountability is to be responsible, answerable or liable for something. We particularly recognized that accountability for environmental health service delivery is shared between the Public Health Division of Alberta Health and the twenty seven local health units. The Alberta model, based on *local delivery of services, supported with expertise at the core*, meant for us that the accountabilities of the Environmental Health Services Branch and the health units were distinct yet interrelated.

An orientation toward **health promotion** and **disease prevention** is particularly relevant to any system of delivery of environmental health services. This principle was reflected in the development of future strategic options for environmental health services in Alberta.

The fourth principle, the **integral link between health and the environment** is the main theme in this report, one that is receiving significant national and international attention.

Directions from the Rainbow Report

A response to the **Rainbow Report: Our Vision for Health**, the 1989 report of the Premier's Commission on Future Health Care for Albertans, is still being developed by the Alberta Government. Regardless of which recommendations are finally adopted, the Rainbow Report is expected to have an enduring influence on the priorities and attitudes of Albertans and their Government.

EXHIBIT 12

Policy Directions Guiding The Study

Ministerial

- *First and more importantly, people are the focus of the health system. Alberta's most fundamental resource is its people. Health is critical to both individual Albertans and to the province as a whole. Health is more than just being not sick. It is a complete state of physical, mental, social, and spiritual well-being, and a resource to help people achieve their aims. Healthy Albertans are able to assure this province's social and economic prosperity.*

- *This leads me to the second principle, and it's that of accountability. It is essential if we are to ensure that the generous yet limited resources we commit to health services are targeted to where they are most needed and that we ensure that we are achieving better health for that commitment. We need to assess the need, target the resources, and evaluate our effectiveness.*

- *This brings me to my third principle, which is that the concepts and principles of health promotion and disease prevention must be relevant and important parts of health services. ... Health promotion cannot be regarded as a program separate from ...* [other] *health service components but must, in fact, be integral to all health service activity. We intend to support and foster personal choice and individual responsibility by embodying the principles of health promotion in all aspects of service delivery.*

- *I'd like to state a fourth principle, and that is that I do not believe you can draw a line between our health and our environment. Our health will suffer if we destroy our ecosystems and use up our resources. Environmental and resource sustainability are prerequisites for maintaining good health. We must, therefore, strive to ensure that our efforts to improve our economy provide protection for the health of Albertans, the health of our province, and that we foster the concept of sustainable development for our children and for our grandchildren.*

Source: Alberta Hansard, p. 791-793 April 25, 1990.

Premier's Commission on Future Health Care for Albertans

- *"Health Albertans, living in a healthy Alberta" can be achieved if the government is prepared to be bold - to demonstrate its commitment to the health of its people as a priority. We need legislation - including a strictly enforced Alberta Code of Health and Environmental Ethics - that ensures that the health of individual Albertans is consciously and publicly in balance with economic development and other initiatives.*

- *19.0 THEREFORE, WE RECOMMEND that the Government of Alberta develop an Alberta Code of Health and Environmental Ethics no later than 1992, by reviewing current policies and introducing new legislation, regulations and procedures to ensure that the health impact on Albertans is given full and equal consideration in matters of economic development and diversification, and job creation.*

Source: The Premier's Commission on
Future Health Care for Albertans;
December, 1989; Vol 2, p. 6 and p. 174.

2.4 POLICY DIRECTIONS GUIDING THE STUDY continued...

The notion of healthy public policy espoused in the report in terms of "**People, Choice, Change, Decisions and Opportunity**" fits well with the current view of health as a resource for living, and of health promotion as a mediation/strategy between people and their environments. It also reflects a recognition of the need for government to learn or relearn the skills of working *with* people as well as *for* them, a matter important in relation to Alberta Health and health unit roles in environmental health.

One of the six fundamental **Directions for Change** in the Rainbow Report deals with the need to balance health and economic development in the context of the environment. **Recommendation 19.0** of the Rainbow Report reflects this direction and calls for a legal means by 1992 to ensure the health impact on Albertans is given full and equal consideration in matters of economic development, development and job creation. This guided us in our thinking about the relationship between environmental health and environmental impact assessment.

These statements of fundamental **Direction for Change** and **Recommendation 19.0** from the Rainbow Report are also quoted in Exhibit 12.

3. THE PRESENT SITUATION I: PERCEPTIONS, METHODS AND INTERAGENCY ARRANGEMENTS

In our search for John Snow's Broad Street pump we to determine the real and perceived health hazards in the environment. What concerns people when they think about environmental issues? What are the applicable theoretical tools and approaches of the health sector, and what should be the priorities for developing programs to respond to public concerns? Given these tools and priorities, who does what at the present time in environmental health in Alberta? This section examines these topics in order to develop future directions for environmental health that are outcome oriented, that is, related to epidemiological data, and are current relative to concepts involving risk determination and health promotion.

3.1 PUBLIC PERCEPTIONS OF THE HEALTH - ENVIRONMENT LINK

Polls Confirm Public Concern About Human Health

We noted in the preface to this report the strong public perception that human health has been affected by factors in the environment. Polls examining perceptions of health risks associated with specific environmental issues reveal strong concerns. Data related to thirteen issues (Exhibit 13) were presented at the recent conference in Toronto on *Environmental Health Issues: A Vision for the Future*, cited earlier in (p 6).

More than 90% of poll respondents considered pollution of drinking water, destruction of the ozone layer, and air pollution from industrial emissions as presenting *Immediate/Life Threatening* or *Serious/Not Life Threatening* health risks to individuals and their family members.[1] Household chemicals were believed to present the same level of risk (*Immediate* or *Serious*), by two thirds of the respondents. The proportion of respondents expressing concern about other issues on the thirteen item list ranged between sixty-six and ninety percent. Evidence cited at the conference indicated that public concern about environmental impacts on health was sustained over the decade, and likely has become more focused in recent years.

Professional pollsters generally agree that if more than 50% of respondents in an unbiased sample expresses a strong view on an issue, it is of major importance to the public.

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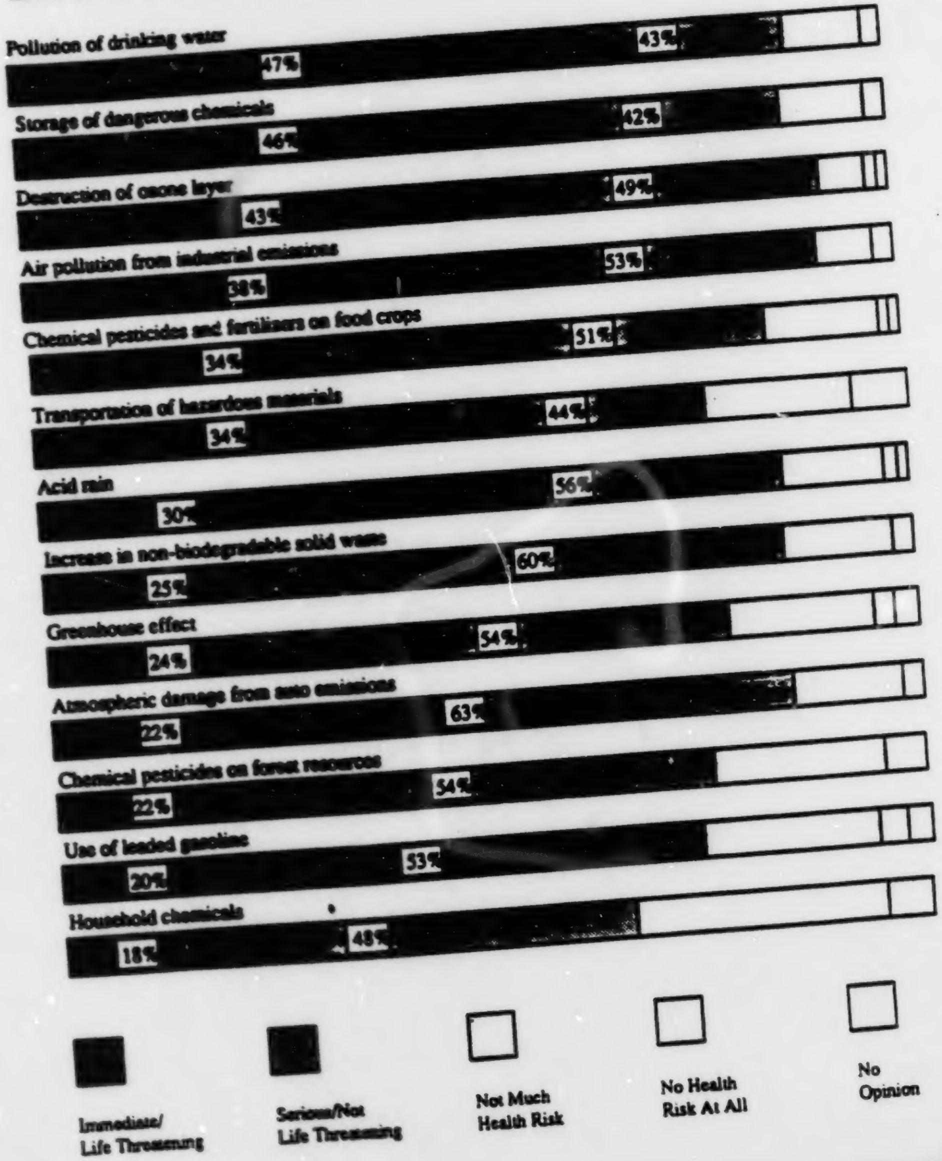
[1] Decima Research; 1989. Data for Canada as a whole. While regional variations exist they are small. This data and its implications apply equally to Alberta and to Canada.

174
60

EXHIBIT 13

Degree of Health Risk Associated With Specific Environmental Issues (June 1989)

Please tell me (how much health risk) you believe ... represents to you and your family



3.1 PUBLIC PERCEPTIONS OF THE HEALTH - ENVIRONMENT LINK continued...

Other Confirmations of Public Concern About Human Health

We are convinced the public is concerned about the health-environment link. Our view is shared, on the basis of informal empirical evidence, by staff of local health units, the Environmental Health Services Branch, and Alberta Environment. Staff of both of these organizations report being asked regularly to respond to questions about risks to the health of individuals and their families resulting from environmental factors.

At the Environmental Health Services Branch, we have already noted the tremendous growth in numbers of "action requests" to draft answers to health impacts of environmental issues addressed to the Minister and to the Department (p 35). In addition the Branch responds to creasing numbers of requests for information from the health units, and direct calls from the public. These events additionally confirm public concern about the health-environment link.

Implications for Government

Three implications follow. First, government needs to develop coherent ways of responding to these public concerns because they are substantive and appear sustained. Second, since personal and family ***health*** impacts are a focus of these concerns, Alberta Health and the Minister of Health, need to be involved in the government response. Third, a close relationship between Alberta Health and Alberta Environment -and the Ministers responsible for these two areas - is necessary to ensure comprehensive, timely, accurate and effective communication with the public.

3.2 HEALTH SECTOR METHODS IN ENVIRONMENTAL HEALTH

3.2.1 Prevention and Health Promotion

Monitoring and application of sound scientific knowledge from the environmental health disciplines as described, for example, in the Guidotti and Conway model (Exhibit 7, p 16) are critical to distinguishing between perceived and real hazards to human health from environmental factors. When the hazards are real, prevention and health promotion are among the major strategies of health field for responding effectively to public concerns.

3.2.1 Prevention and Health Promotion continued...

Prevention

Preventive measures are associated with the narrower definition of health. They seek to reduce the likelihood that (1) a disease or disorder will affect an individual, (2) interrupt or slow the progress of the disorder, or (3) reduce disability. The basis of prevention lies in the risk or probability of suffering from a disease in the future. Risk reduction is therefore the basis of most prevention programs.[2]

Commonly recognized prevention programs include perinatal care, immunization, breast screening, and public health inspections. More recently, injury prevention, particularly outside the workplace, is emerging as an important area for intervention.[3] Much of the work of the Public Health Division of Alberta Health, including the work of the Environmental Health Services Branch concerns prevention. Prevention is also a key focus for the local health units in their delivery of services.

Health Promotion

Health promotion reflects the wider definition of health - beyond absence of disease and infirmity. The focus of interest is ***health*** itself and approaches and activities to maintain and enhance it. The determinants of health discussed by Evans and Stoddart (Exhibit 4, p 10) form a basis for health promotion efforts and confirm its relevance to environmental health. Since environmental health is concerned with the ways our *social and physical* environments affect our health, health promotion seeks ways of ensuring these environments contribute positively to our health - are "healthy" environments.

In the 1970s and early 1980s, health promotion efforts in Canada focused on individual efforts to promote healthy lifestyles. The added value of social action, community and population-based efforts to achieve positive health states, is increasingly recognized. Health promotion now extends well beyond public education measures of the past, into the realm of ensuring healthy communities, and the formulation of healthy public policies.

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[2] Stachtchenko and Jenicek; 1990.

[3] Health and Welfare Canada; 1990. *Highlights from the Second Annual Injury in Alberta Conference.*

3.2.1 Prevention and Health Promotion continued...

These new directions reflect the definition of health promotion established by WHO, in what is known as the ***Ottawa Charter for Health Promotion***:

> *Health promotion is the process of enabling people to increase control over, and to improve their health. To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment. Health is, therefore, seen as a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, also physical capacities. Therefore, health promotion is not just the responsibility of the health sector, but goes beyond healthy life-styles to well-being.*[4]

Health promotion since the latter part of the 1980s represents a mediating strategy between people and their social and physical environments. It synthesizes personal choice and social responsibility in health to create a healthier future.[5]

Prevention, especially in the form of the emerging science of risk determination, offers particular, but not exclusive, relevancy for responding to chemical and physical hazards in the environment. Health promotion offers particular, but not exclusive, possibilities for dealing with hazards in social environments.

3.2.2 Risk Assessment and Risk Management

Intuitive Notions of Risk

The notion of risk is intuitive and something that we all accept in one form or another in our daily lives. Everything we do has some measure of risk associated with it. If we have a choice in the matter we can usually assess whether a hazardous situation is worth accepting or should be avoided. If accepted, a further decision can be made on the value of personal efforts possible for reducing the risk to lower levels.

The personal calculation of risk/benefit trade-offs also may extend to risk-risk trade-offs. The problem, however, is somewhat more complex when we have no choice, or when the risks fall to us and the benefits to someone else. The issue of uneven distribution of risks and benefits that may result from major projects and their environmental impacts presents serious challenges for decision makers and can present ethical and moral problems for society.

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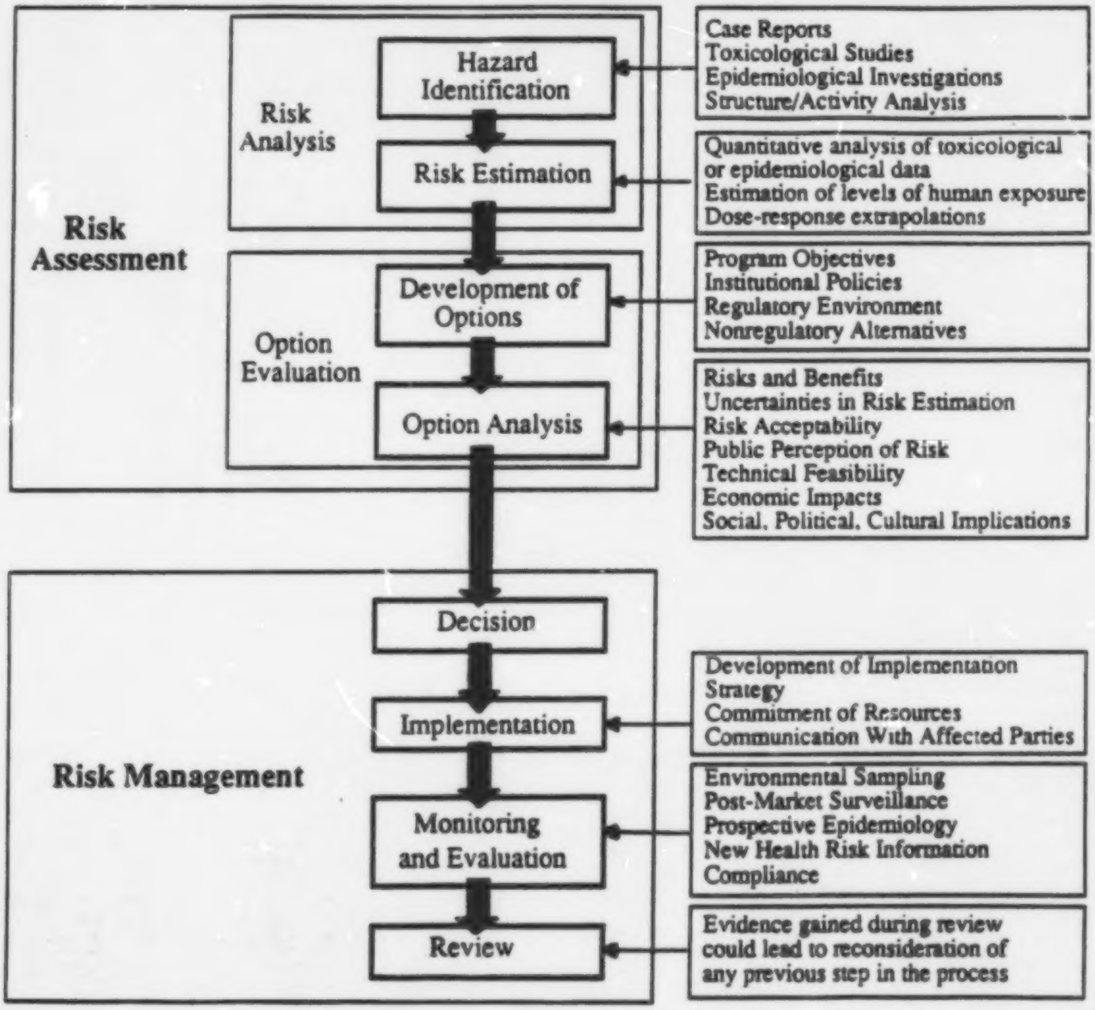
[4] WHO and Health and Welfare Canada: 1986.

[5] Health and Welfare Canada: 1986.

EXHIBIT 14

Risk Determination

A Framework for Risk Assessment and Risk Management


Risk Assessment
Risk Analysis
Hazard Identification
Risk Estimation
Option Evaluation
Development of Options
Option Analysis
Case Reports
Toxicological Studies
Epidemiological Investigations
Structure/Activity Analysis
Quantitative analysis of toxicological or epidemiological data
Estimation of levels of human exposure
Dose-response extrapolations
Program Objectives
Institutional Policies
Regulatory Environment
Nonregulatory Alternatives
Risks and Benefits
Uncertainties in Risk Estimation
Risk Acceptability
Public Perception of Risk
Technical Feasibility
Economic Impacts
Social, Political, Cultural Implications
Risk Management
Decision
Implementation
Monitoring and Evaluation
Review
Development of Implementation Strategy
Commitment of Resources
Communication With Affected Parties
Environmental Sampling
Post-Market Surveillance
Prospective Epidemiology
New Health Risk Information
Compliance
Evidence gained during review could lead to reconsideration of any previous step in the process

Source: Risk Management in the Health Protection Branch, Health and Welfare Canada, January 1990

3.2.2 Risk Assessment and Risk Management continued...

A Model for Risk Determination

Risks must be balanced. They also must be assessed, managed and communicated. The step by step model displayed in Exhibit 14 presents a current approach to risk determination. It is the one followed by the Health Protection Branch of Health and Welfare Canada, an agency with leading expertise in scientific determination of hazards and their potential for damage to human health.

Application of the model is detailed in Health and Welfare documents.[6] In the *Hazard Identification* stage, for example, epidemiological studies of disease in human populations and toxicological investigations of substances, conducted in laboratories, are two methods used for identifying health hazards.

Where such studies do not yield sufficiently strong evidence of deleterious effects to justify taking action on its own merits, the "Weight-of-Evidence" concept is applied. This concept was originally developed for carcinogenic effects by the International Agency for Research on Cancer, and has been adapted for extensive use by the Food and Environmental Directorates of the Health Protection Branch. In essence, this concept requires a wide range of sources of information to be correlated in order to achieve an overall assessment of the hazard.

Since hazards are many and resources are finite, priorities for determining which ones should require management intervention are established based on factors such as (1) the severity of a hazard; (2) the number of people affected; (3) the power to correct or control a hazard; (4) the direct cost of the necessary program; and (5) the economic consequences of the program. Specific criteria for priority setting are developed by the various programs of the Health Protection Branch yielding, for example, surveillance priority ranking for communicable and chronic diseases, in order to assist Health and Welfare Canada's Laboratory Centre for Disease Control with the allocation of its resources and efforts.

The *Risk Estimation* stage in the model relies on epidemiological and toxicological risk assessment techniques to estimate mathematically risks associated with an exposure hazard. *Evaluation of Options* requires the assessment of possible measures for dealing with the hazard. These include regulatory, economic, advisory and/or technological measures.

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[6] Health and Welfare Canada; 1990.

3.2.2 Risk Assessment and Risk Management continued...

In the *Risk Management* phase, the nature of the risk and its risk-risk and risk/benefit trade-offs are weighted, as are the limits of technological interventions, the organizational abilities to effect and manage an intervention, and public perceptions of the risks. Public participation in the decision-making process is regarded as crucial.

Monitoring, evaluating and *reviewing* decisions ensures a continual process of renewal in the model.

Risk Communication

Risk communication is the exchange or provision of information to inform, persuade or warn others about risks to health. Communication techniques designed to persuade are based on the fundamental premise that an individual always has the right to accept or reject the message conveyed. The communicator may choose to alter intervention measures based on a close monitoring of the target's response to assure the desired change in behaviour or belief. Extensive empirical studies and the theory of communication are applied in the field of Marketing to research the characteristics, interests and motivations of target populations to develop ways of persuading people to change their patterns of consumption behaviour.

The following insightful points on risk communication were offered to the study by Dr. Katherine Davies, in her brief speaking for the Canadian Environmental Assessment Research Council.

- *Traditional information dissemination approaches to risk communication no longer satisfy public demands for more participation in the decision-making process.*
- *There are usually profound differences in the ways different stakeholders perceive risks.*
- *The believability of risk information depends on the trust in and credibility of the risk communicator.*
- *Risk communication should start at an early stage in the decision-making process. The "decide, announce and defend" approach can alienate prospective stakeholder.*
- *Different strategies are needed in different circumstances.*

3.2.2 Risk Assessment and Risk Management continued...

- *The media are important players.*
- *Sometimes different stakeholders have different objectives and risk communication can become a vehicle for reconciling them.*

3.2.3 Validating Health Values and Interventions

An Outcome Approach As An Ideal

Ideally, programs of environmental health protection and promotion should be based on identified outcome objectives. Outcome objectives are expressed in terms of the health effects of hazards in our social and physical environments, incorporating the definitions and concepts of Chapter 2.

In the physical environment, this would mean expressing outcome objectives in terms of the health effects of biological, chemical and physical hazards that impact on humans through the media of air, water, soil, food, also insect and rodent vectors. Such objectives would not only provide the basis for justifying interventions and the resources required to execute them, but would embody a level of scientific credibility that would counterbalance the weight of competing economic, social and political values. Such a model has in fact been realized, at least in some industrialized countries, with respect to some communicable diseases and application of measures to control them.

Uncertainty and Complexity Make the Ideal Difficult to Achieve

Particularly in relation to chemical and physical pollution (and some of their interactions with biological pollution), scientific, technical, situational, and administrative (primarily informational) resources make this model difficult to apply and to justify. Among the difficulties that face any health authority in a specific jurisdiction are the following.

- Incomplete knowledge of (a) the full range of hazardous substances and energy forms and (b) each of their effects on the health of humans, other fauna, and flora, particularly when exposures to man-made sources are chronic and low-level. Different levels of knowledge apply not only with respect to various chemicals and compounds thereof, but also in relation to energy forms; it is more feasible to calculate the health effects of given exposures of a population to ionizing radiation (although meteorological and topographic factors introduce uncertainties) than to calculate health effects of non-ionizing radiations. Past and concurrent exposures to natural sources in different places further complicate such calculations.

3.2.3 Validating Health Values and Interventions continued...

- Incomplete information on pollution sources and the generation, emission, and movement of pollutants.

- Calculating the health effects of concurrent exposures to multiple hazards, which likely have combined, cumulative, and synergistic actions.

- The unlikelihood, if not impossibility, of attaining "zero risk" states while maintaining any plausible level of human activity. The determination of "tolerable risks" is complicated by differences in host reactions to identical environmental stressors.

- Changes in the state of environmental risk as (a) new elements (e.g., chemical compounds) are introduced, (b) cumulative effects on the environmental media occur, and (c) human individuals and groups pass through various levels of vulnerability at different life stages and because of cumulative exposures, some of which depend on chance and others on choice.

The Importance of Community-Based Values

Such difficulties result in a critical component of environmental health action consisting of risk assessment and hazards evaluation. They also compel the assertion of health values and the instituting of protective interventions to be justified on a mixed basis, including (1) scientific knowledge, insofar as available; (2) inferential judgements, typified by the transposition of laboratory findings to epidemiological equivalents, also the use of markers as effects on other species; and (3) the adoption of postures of reasonable prudence as the basis for decisions and interventions with respect to uncertainties in assessing risks.

Beyond the realm of health protection, the promotion of environmental health through environmental health programs consonant with the aspirations and abilities of communities defies rationalization on any but the most localized bases.

As a result, the main body of environmental health interventions and their concomitant resources, particularly with respect to somewhat new and unfamiliar hazards in our physical and social environment, including those that are suspect, has to be justified in terms of a community's need for a capacity to execute required protective functions that are appropriate to the perceived universe of risks, and that is affordable in relation to the community's values and means.

3.3 AN ORIENTATION TO OUTCOMES

We have noted almost all environmentally influenced health problems are multifactorial. Necessarily, their solutions involve approaches and efforts that are intersectoral. In many environmental health situations, problems might be identified by the health sector but solutions are in the hands of others. With due consideration for our general caveats of the previous subsection, successes in reducing health risks are likely to be increased by targeting priority disease outcomes and developing coordinated intersectoral approaches at prevention and promotion.

3.3.1 Priorities From Health Outcomes

Criteria for Identifying Priorities

The setting of priorities must be related to feasibility. The health effects or diseases targeted for intervention must be preventable; they must have feasible solutions with a high probability of success; and they must have a net benefit. Many health professionals probably would agree, given these general criteria, that special attention should be given to the following:

- health effects with high morbidity, that is, many persons are affected - such as fractured limbs in the elderly;
- health effects with high mortality, that is, many people die of the disease - such as cancer;
- serious diseases which are preventable but which cannot be cured or effectively treated - such as lung cancer;
- relatively uncommon diseases which carry major threats for the future - such as AIDS;
- conditions which are increasing for reasons unknown at present - such as life threatening or incapacitating asthma;
- conditions which mainly afflict the young and hence lead to significant potential years of life lost;

EXHIBIT 15

The Leading Causes of Death in Alberta in 1989

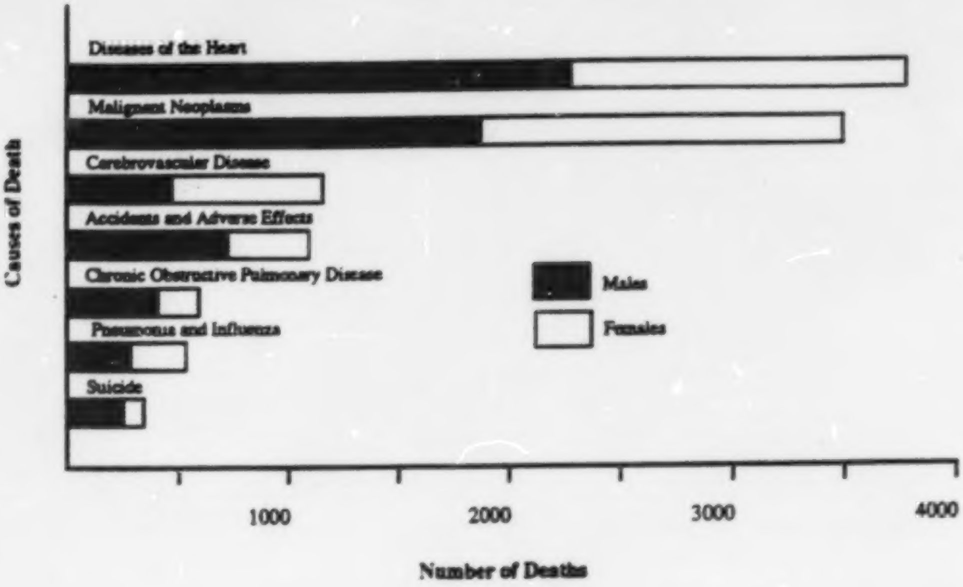

EXHIBIT 16

The Leading Causes of Death in Alberta in 1989

Cause of Death	Male	Female	Total	Rate /1000
Diseases of the Heart	2277	1498	3775	1.56
Malignant Neoplasms	1893	1624	3517	1.46
Cerebrovascular Disease	480	639	1119	0.46
Accidents and Adverse Effects	730	354	1084	0.45
Chronic Obstructive Pulmonary Disease	399	171	570	0.24
Pneumonia and Influenza	277	250	527	0.22
Suicide	272	85	359	0.15

Source: Alberta Health

3.3.1 Priorities From Health Outcomes continued...

- conditions with severe continuing disability such as head and spinal injuries;
- conditions or diseases with high economic impacts such as losses of productivity and high costs of providing care;
- health risks which are of public concern whether or not they pose a serious risk to health; and
- conditions where there are strong social or political pressures for action.

Areas of Priority Attention

Based on our examination of morbidity and mortality, and considering the criteria given above, we suggest six areas for priority attention, in terms of health outcomes in Alberta: **trauma, cancer, cardiovascular disease, respiratory diseases, congenital anomalies,** and **communicable diseases**. Our list is intended as a beginning. It is subject to refinement, for example, by application of the Risk Determination Model (Exhibit 14, p 40), and by assessment against Alberta Health goals. We discuss each six areas in turn.

The seven leading causes of death in Alberta in 1989 are shown in Exhibits 15 and 16 as one of our reference points for the discussion that follows.[7]

Trauma: Analysis of the age standardized mortality rates for men for the years 1983-1987 reported by Alberta Vital Statistics showed that deaths from traumatic injury ranged 12-16% greater than the national average and for women about 6% greater. When examined by age group, it was clear that in the first four decades, injury as a cause of death outweighed the other leading causes of death. The leading causes of death from injury are motor vehicle traffic accidents, suicide, and falls. Deaths from drowning, poisoning, and fires are other leading causes.

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[7] Alberta Health; 1990.

EXHIBIT 17

Person Years of Life Lost (PYLL) By Various Causes of Death in 1987

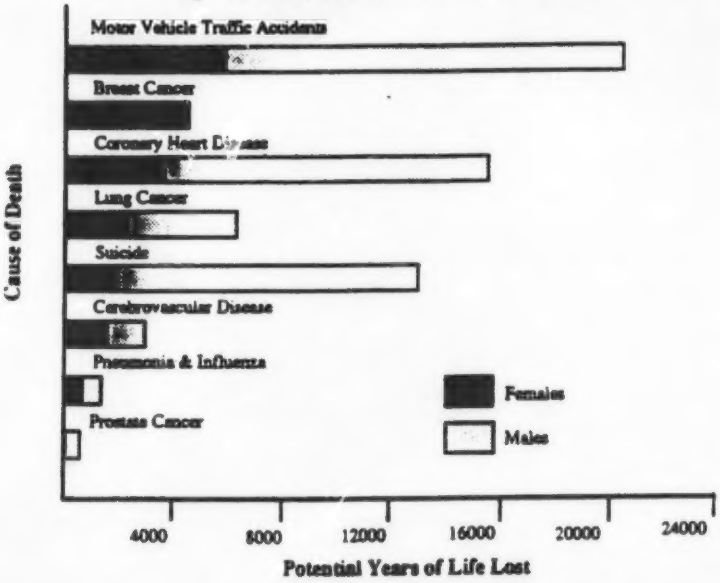

EXHIBIT 18

Person Years of Life Lost (PYLL) By Various Causes of Death in 1987

	Females		Males	
	PYLL	%	PYLL	%
Motor Vehicle Traffic Accidents	5860	10.7	14832	14.6
Breast Cancer	4530	8.3		
Coronary Heart Disease	3490	6.4	12222	12.1
Lung Cancer	2222	4.1	3986	3.9
Suicide	2067	3.8	11372	11.2
Cerebrovascular Disease (Stroke)	1500	2.7	1485	1.5
Pneumonia & Influenza	822	1.5	991	1.0
Prostate Cancer			685	0.7

Source: Alberta Health

3.3.1 Priorities From Health Outcomes continued...

Expressed as potential years of life lost, motor vehicle accidents outranked coronary heart disease and suicide (Exhibit 17 and 18).[8] Motor vehicle accidents as a cause of death among adult males ranked second in Canada. In Canada as a whole such deaths account for 11% of the total years of life lost for men; whereas in Alberta motor vehicle deaths represent 14.6% of the total. Male suicides in Alberta accounted for 2.5% more potential years of life lost than in Canada as a whole.

While our comments stem immediately from potential years of life lost, morbidity provides an equally important basis for our comments. As Dr. Louis Francescuiti notes:

> *A death from injury is the tip of an iceberg: for every fatal injury, 45 require hospitalization, about 1300 result in a visit to an emergency department, and an unknown number visit a physician or clinic.*[9]

Alberta's particular problem with traumatic injuries was recognized by Dr. Louis Francescuiti in establishing the Injury Awareness and Prevention Centre. In 1990, Alberta Health also initiated action to respond to trauma by specifying children and seniors as the priority target populations for who detailed injury prevention program options are to be developed.[10]

The priorities established by Alberta Health on accident and injury prevention should provide the starting material for interdepartmental and even broader partnerships in tackling this high priority area.[11]

Cancer: Cancer is high on the list of public concern because of its perceived relationship to environmental contaminants. Estimates of the percentage of deaths attributable to various factors in the United States are given in Exhibit 19, on the next page. These figures are taken from a report by the Alberta Cancer Board.[12]

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[8] *ibid.*

[9] Health and Welfare Canada; 1990.

[10] Smith, N; 1990.

[11] *ibid.*

[12] Berkel, Anderson, Hanson, MacMillan and Raphael; 1990.

3.3.1 **Priorities From Health Outcomes** continued...

EXHIBIT 19

Estimates of Cancer Risk Attributable to Various Factors

Factor	**Range of Acceptable Estimates %**	**Factor**	**Range of Acceptable Estimates**
Tobacco	25 - 40	Pollution	<1 - 5
Alcohol	2 - 4	Diet	10 - 70
Industrial Products	<1 - 2	Food Additives	0.5 - 2
Medicines & Medical Procedures	0.5 - 3	Geophysical Factors	2 - 4
		Reproductive and Sexual	1 - 13
Infection	?	Unknown	?

Environmental factors contribute substantially to cancer excesses. The problem in the community or non-occupational setting is that it is not clear that specific agents are responsible for specific concerns and to what extent. Nevertheless, lung cancer remains a high priority. When the age standardized incidence rates for lung cancer are examined for Alberta there is evidence of a decrease in rates for males beginning in 1984 but a steady increase in rates for women. This has been attributed to a proportionate increase in the number of women smokers compared to men smokers.[13]

Programs to identify targeted groups and approaches to prevention of cancer should continue to be a major Alberta initiative. Besides smoking, passive smoking (sidestream smoke) deserves particular attention. The role of food additives, and particularly the prevalence of high priority cancer causing substances in food, air and water also requires special attention. (Also see **Emerging Issues** in the next section, p 61).

Cardiovascular disease: Epidemiological studies indicate that the incidence and prevalence of cardiovascular disease are influenced by several environmental factors including smoking, salt intake, stress, hardness of water, and exercise. While Alberta on balance fares better than Canada as a whole, it is still an important cause of death that can be modified. Alberta should participate in national initiatives aimed at reducing this disease.

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[13] *ibid.*

3.3.1 Priorities From Health Outcomes continued...

Respiratory Disease: While respiratory disease (apart from pneumonia and influenza) as a cause of death is not among the top seven, chronic obstructive lung disease is in fact more common as a cause of death in Alberta than in Canada as a whole. It is well recognized as being influenced by smoking and possibly also by passive smoking. It may be exacerbated by exposure to chemical agents such as sulphur dioxide that is a common contaminant of the air when H_2S is burned off. While recent studies of the health of communities living downwind of sour gas plants in Southern Alberta may have allayed some fears of health risks for the particular population studies, such questions will no doubt continue to arise in other areas and in relation to other industries such as pulp and paper.[14] [15]

Asthma, is receiving increasing attention on a world scale. As a disease that might be triggered by somewhat low environmental exposures, it is an important area requiring attention. A recent press release by respiratory disease researchers on the mortality from asthma in Alberta notes that the Province's asthma death rate is 12% above the national average.[16]

The Alberta Lung Association has recently made asthma a priority. A collaborative study in this area might assist in identifying the factors responsible for asthma and asthma mortality in Alberta, for example various air contaminants, and appropriate preventive strategies.

(Related issues are also discussed under **Indoor Air Pollution** in the next section.)

Congenital Anomalies and Reproduction Impacts: The number of resident infant deaths in Alberta in 1989 was 309 with neonatal deaths totalling 179. The most common cause of infant deaths was congenital anomalies followed by sudden infant death syndrome. The existing reporting system and the case control studies identified earlier should be used to determine the role if any of environmental factors.

Similarly, reproductive impacts need to be considered, particularly infertility that may be associated with organochlorides in food or water. (Also, see **Emerging Issues** in the next section.)

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[14] Dales and Spitzer; 1989.

[15] Spitzer and Dales; 1989.

[16] Ford, Green and Chapman; 1990.

3.3.1 Priorities From Health Outcomes continued...

Communicable Diseases: Based on discussions with Public Health Division staff, the following communicable diseases require priority attention:

- HIV/AIDS
- Vaccine preventable diseases such as tetanus, diphtheria, poliomyelitis, measles, mumps, rubella, haemophilia
- Hepatitis B and C
- E Coli 0157
- Salmonellosis
- Campylobacter Enteritis
- Giardiasis
- Shigellosis
- Influenza
- Sexually transmitted diseases such as gonorrhoea, syphilis, chlamydia
- Legionellosis
- molds, yeasts and fungi related to respiratory ailments
- viruses (for example, enteric viruses, cytomegaloviruses)

In anticipating potential threats in infectious disease in the future, we also considered the zoonoses - diseases of animals transmissible to man. Given recent European experience we draw attention to BSE (Bovine Spongiform Encephalopathy) and salmonellosis as examples. From examination of available veterinary evidence the zoonoses appear well monitored, documented and where appropriate, standards are enforced in Alberta. Officials of the Provincial Laboratory of Public Health, however, have expressed concerns about potential future problems. With new production technologies problems may arise, for example, by high protein feeding of cattle and the abandonment of traditional methods of raising livestock and poultry that have proven to be safe in the past. Such changes could lead to negative consequences. The deleterious effects of the above zoonoses on the beef and egg industries in Britain and continental Europe have been rapid and continuing because of concerns over real and potential threats to human health.

While infectious diseases and food diseases are at a low level they remain so because they are carefully monitored.

3.3.2 Priorities From Exposures Presenting Potential Hazards

Priority Hazards and Agents

An alternative approach to priority setting is to identify hazardous chemicals and other agents in the environment. Information from the literature and studies can be used to assess the risk for persons living near a plant or exposed to certain levels of contaminants. It would then be possible to develop strategies to manage the risks presented by these agents. According to a 1986 review by the Organization for Economic Cooperation and Development, about ten million chemicals have been identified by the chemical Abstract Service Registry. Some eighty to one hundred thousand of these are important to industry. Determining which ones pose hazards to health is clearly a major, ongoing task requiring international expertise.

Federal legislation, the *Canadian Environmental Protection Act (CEPA)* provides a mechanism for identifying substances, including chemicals, groups of chemicals, effluents and wastes that may be harmful to the environment or constitute a danger to human health. *CEPA* requires the Minister of the Environment and Minister of National Health and Welfare to publish a list of such substances in the form of a Priority Substance List, and assess and determine whether each substance is "toxic" as defined in the *Act*. If these substances are found to be "toxic", they are to be placed on Schedule I of the *Act*. This allows for the making of regulations to control any aspect of their life cycle, from the research and development stage, through manufacture use, storage, transport, and ultimate disposal (Exhibit 20, p 58).

Considering Alberta's growing and increasingly diversified industrial base, it would be highly appropriate for staff of Alberta Health's Environmental Health Service Branch to be current and knowledgeable about this list and substances placed on Schedule I of *CEPA*. (Staff also may find it useful to be familiar with other key sources, for example, evaluations of carcinogenic risk to humans from chemicals, industrial processes and industries prepared by the International Agency for Research on Cancer - IARC Monographs Supplement 4, Table 1.)

Potential Sources of Hazardous Agents

An immediate starting point for setting priorities would be to identify potential sources of the hazards, associated with the most common industries and known to be emerging issues. This should, of course, be done in conjunction with other provincial departments and agencies, such as Alberta Occupational Health and Safety, Alberta Labour, Alberta Environment, Alberta Public Safety Services and so forth.

The following major industries and sources of exposure are likely to need attention or be of concern to Alberta residents.

EXHIBIT 20

Priority Substances List of the Canadian Environmental Protection Act

Group 1:

Arsenic [7440-38-2] and its compounds
Benzene [71-43-2]
Effluents from pulp mills using bleaching
Hexachlorobenzene [118-74-1]
Methyl tertiary-butyl ether [1634-0404]
Polychlorinated dibenzodioxins
Polychlorinated dibenzofurans
Polycyclic aromatic hydrocarbons
Waste crankcase oils

Group 2:

Cadmium [7440-43-9] and its compounds
Chlorinated wastewater effluents
Chlorobenzene [108-90-7]
Chromium [7440-47-3] and its compounds
Creosote-impregnated waste materials
Dibutyl phthalate [84-74-2]
1.2-Dichlorobenzene [95-50-1]
1.4-Dichlorobenzene [106-46-7]
1.2-Dichloroethane [107-06-2]
Dichloromethane [75-09-2]
Di-n-octyl phthalate [117-81-7]
bis(2-Ethyhexyl) phthalate [117-81-7]
Inorganic fluorides
Nickel [7440-02-0] and its compounds
Pentachlorobenzene [608-93-5]
Styrene [100-42-5]
Tetrachloroethylene [127-18-4]
1,1,2,2-Tetrachloroethane [79-34-5]
Tetrachloroethylene [127-18-4]
Toluene [108-88-3]
Trichlorobenzenes
1,1,1-Trichloroethane [71-55-6]
Trichloroethylene [79-01-6]
Xylenes [1330-20-7]

Group 3:

Aniline [62-53-3]
Benzidine [92-87-5]
Chlorinated paraffin waxes [63449-39-8]
bis(2-Chloroethyl) ether [111-44-4]
bis(Chloromethyl) ether [542-88-1]
Chloromethyl methyl ether [107-30-2]
3.3-Dichlorobenzidine [91-94-1]
3.5-Dimethylaniline [108-69-0]
Methyl methacrylate [80-62-6]
Mineral fibres
Organotin compounds (non-pesticidal uses)

Source: Health and Welfare Canada; 1990.

3.3.2 Priorities From Exposures Presenting Potential Hazards continued...

The Chemical Industries: Public concerns with health impacts of living near a chemical plant are common. A systematic approach to dealing with this issue has been developed by the Canadian Chemical Producers Association and is known as the Community Awareness and Emergency Response (CAER) program. This program opens the door of the petrochemical plant to the public, shows them the results of measurements of off-releases of contaminants, methods of waste disposal, health programs for employees, accident records etc. A similar program was introduced on a community scale in California in 1984.[17]

The possibility of extending such a community wide program beyond present industry initiatives east of Edmonton could be examined by Alberta Health working in conjunction with Alberta Occupational Health and Safety, Public Safety Services, Alberta Environment and individual health units. The concept could be expanded to include a broad spectrum of industries in an area, especially those which cause concern among the public such as gas plants, pulp and paper operations and chemical plants. This partnership with industry would put peer pressure on poor corporate actors and would contribute to removing the fears of the unknown at the local level.

Oil and Gas Industry: While questions of emergency response have been worked out effectively with the Energy Resources Control Board (ERCB), there are still likely to be concerns about the health effects of gas emissions, tar sand effluent and hydrogen sulphide exposures. In the latter case, there is an excellent example of intersectoral collaboration involving the Universities of Alberta, Calgary and the Alberta Environmental Centre which would serve as a model for maximizing the utilization of expertise in the province in other areas.

Forestry: Public concern about pulp mills is unlikely to disappear. Issues surrounding pulp and paper effluent, dioxin, and gas emissions will continue to be a high priority for attention. Alberta Health and the staff of Alberta Health in turn will continue to benefit from the assistance of staff at the Alberta Environmental Centre and will be of value for monitoring this industry.

Agriculture: While there exist interdepartmental committees addressing the question of pesticides and herbicides, concerns have been expressed about the disposal of containers, risks for family members on farms and in horticultural activities, and run-off into drinking water systems. There is a need for information to address these and other concerns and to identify priority areas for attention in conjunction with Alberta Agriculture and Alberta Environment.

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[17] Guidotti; 1984.

3.3.2 Priorities From Exposures Presenting Potential Hazards continued...

Biotechnology: In the slightly longer term, biotechnology industries and industries with products with the potential for releases will become increasingly important. Alberta Health should monitor developments in this area by liaising with the Alberta Research Council and participating on the interdepartmental Committee on Biotechnology.

Recycling of Wastes: The pressures that exist now concerning waste disposal will stimulate the development of new waste recycling and disposal industries. Long and short term storage issues and health risks to the public will need to be addressed and a mechanism put into place to identify the new initiatives.

Industrial Waste Disposal: Alberta possibly leads Canada in waste disposal with its Swan Hills Facility. However the issues of storage, transportation and methods of disposal will continue to arise as will transportation emergencies.

Radiation: There has been an increasing awareness by the public of other possible physical environmental effects such as the effects of power lines, electric blankets, and radon. These issues may come to the attention of health units. The responsibility for the Radiation Health Act rests with Alberta Occupational Health and Safety.

Also requiring attention are the effects of sunlight and suntan parlours in view of reports of increasing incidence of melanomas.

Indoor Air Pollution: An area of increasing public concern is with the effect of indoor air resulting from increasingly "closed" buildings. This year an international Symposium on Indoor Air was held in Toronto. The Federal Provincial Advisory Committee on Occupational and Environmental Health has developed indoor air quality guidelines and a task force is currently developing guidelines for indoor air surveys.

While the increased risk of cancer claimed from living with a smoker is relatively small (20% -100% increase in risk over the risk of lung cancer for a non-smoker), the results of studies on the effect on heart disease are consistent with a small increase in risk and this is supported by what is known about carbon monoxide and other smoke compounds. There also appears to be increasing evidence that passive smoking might be linked to decreased birth weight and respiratory and other effects.[18]

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[18] Woodward; 1990.

3.3.2 Priorities From Exposures Presenting Potential Hazards continued...

Off-gassing of furniture and other household goods; heating system deficiencies; bacteria, spores and fungi in ventilation systems; and proximity to industry emissions are just a few of the problems that Alberta Health should be in a position to tackle. Indoor air is likely to become a long term concern. Alberta Health should ensure that it is part of the interdepartmental task group examining indoor air issues.

Emerging Issues: Important toxicological issues of concern to the public as well as to the scientific community have spanned a wide range. This range encompasses exposure of chemicals where the major problem is one of perception rather than definite health risks (such as PCBs), to exposure of children to heavy metals where at high concentrations the risks of health effects are well described (such as lead). The detection of ultra-low concentrations of chemicals in the environment, in foods, and in various biological tissues and fluids prompts questions on the implications for health. Examples include concerns about (1) cancer risks surrounding the detection of low concentrations of dioxins or pentachlorophenols in mother's milk, and (2) the neurotoxic risks related to very low levels of lead or other heavy metals in the blood of children, and (3) contaminants like pesticides and other agents. In responding to these and other concerns, Alberta Health will need to keep up to date and develop appropriate risk identification and intervention responses.

Alberta Health has an opportunity to work collaboratively with the Alberta Environment Council and many other provincial agencies and departments to develop state of the art information packages in such key controversial and emerging areas.

3.3.3 Extending Priorities to Contribute to Well-Being

Extending the Range of Environmental Stressors

Beyond the narrower concerns of preventing disease and infirmity, Alberta Health needs to support activity that improves conditions in the social as well as physical environments, by giving attention to factors that affect human health in its wider definition - one which includes well-being. Environmental stressors such as noise, odour, visual pollution and organizational dysfunction are examples of agents that can limit our health and function - our own sense of whether we are ill, and hence our perception of our well-being. Some of these activities, such as noise and odour, already involve Alberta Health or its related agencies through the requirement in the Public Health Act to deal with nuisances. Other factors such as visual pollution and organizational dysfunction generate difficult to gauge effects, except in extreme conditions. The latter areas could be left, for the present, for other organizations to examine and then inform Alberta Health of potential interventions - academic, research and other agencies.

3.3.3 Extending Priorities to Contribute to Well-Being continued...

Community-Wide Initiatives

Considering where we live offers an important opportunity for extending our concept of environmental health. We live mainly in communities. By enhancing awareness about community environments that affect human health and safety, we can contribute to the well-being of large groups of people. This idea is the basis for the "Healthy Communities Program" initiated by the Canadian Public Health Association, the Canadian Institute of Planners (and the Federation of municipalities). The program is being piloted in Victoria and Quebec City. It aims to strengthen the health of communities by ensuring that health is an explicit consideration in the policies, plans and programs of municipalities, and that the concepts of health promotion are applied at the local level.

A comparable, somewhat earlier project is the "Healthy Cities Project" of the European Region of the World Health Organization, which was initiated by the workshop "Healthy Toronto 2000". This project established an intersectoral framework for health promotion in the urban context (also, see section 4.3.1, following).

Contemporary views accept that the health of a community is not primarily the product of the health care system. It is the product of a whole range of environmental, social and economic policies, as well as the actions of community agencies and groups, and of corporate and individual citizens. The decisions of municipal governments, therefore, have a great bearing on the health and quality of life of their citizens. Alberta Health and local health units could lend support to Municipal Affairs and local communities to promote the concept of "healthy communities" and hence the well-being of their residents.

Comparable opportunities and needs exist in promoting positive social policy and action leading to "safe communities", "healthy environments" and province-wide "sustainable development".

Individual and Group Initiatives

The long term stability of our natural and economic cycles is important to human health, as shown in Chapter 2. Our health can be enhanced by participating in socially responsible activity which sustains the natural environment and the stability of its environmental cycles. Promoting individual and group activity in support of recycling, use of "green" products, water conservation, and other measures are therefore examples of environmental health activities. Alberta Health, together with its associated boards and agencies, including the health units, can and should show leadership in support of the environmental movement. Formulating "Environmentally friendly" policies and supporting their implementation in hospitals, nursing homes, and health units is an important, socially responsible step that could be taken by Alberta Health.

3.3.4 Summary and Implications

We summarize this section by outlining priorities for program planning in Alberta in two exhibits on the following two pages. The first, Exhibit 21, presents priorities based on outcomes, that is, based on epidemiological data - to the degree possible. The second, Exhibit 22, presents priorities based on exposures. Both exhibits reflect the criteria posed at the beginning of section 3.3.1 (p 49). Also, both exclude certain high priority outcomes (for example, suicide), because they more directly fall into other areas (for example, mental health), although social environments may play an important role in their causes.

A number of implications follow.

- Environmental health covers a wide domain of outcomes and exposures. Functions of environmental health need to be considered as groupings of activity that may be part of the jurisdiction of different departments. For example, activity to promote well-being in health facilities as a workplace environment, readily fall within the jurisdiction of Occupational Health and Safety.

- Equally, certain functions of environmental health are also carried out within various parts of Alberta Health, particularly the Public Health Division. For example, program initiatives in (1) trauma (2) cancer (3) cardiovascular disease (4) communicable diseases.

- Finally, the distinction in roles between the health units and Alberta Health - *local delivery supported by expertise at the core* - must be kept in mind. The priorities indicate what kinds of service and what kinds of expert resources are important. They do not indicate the optimum distribution of resources between Alberta Health and the health units. Nor do they reflect the important priority of responding to public questions and concerns - explaining and identifying hazards, and communicating risks.

EXHIBIT 21

Priority Areas for Planning Based on Health Outcomes and Associated Health Hazards and/or Health Enhancing Behaviours

Chronic Illness, Injuries and Reproductive Outcomes

Trauma
- Motor Vehicle Accidents
- Falls
- Drowning
- Poisoning
- Fires
- Injuries from certain acute chemical spills and mechanical hazards in residences and public places

Cancer
- Cancers induced by food, water and air-born chemical contaminants, and by excess radiation
- Tobacco product use (e.g., sidestream smoke)
- Food additives

Cardiovascular Disease
- Smoking
- Salt intake
- Water quality

Respiratory Disease and Allergies (especially Asthma)
- Chemical and particulate contaminants

Reproductive Outcomes of Chemical Contaminants
- Congenital abnormalities
- Developmental problems
- Infertility

Communicable Diseases

- HIV/AIDS
- Vaccine preventable diseases such as tetanus, diphtheria, poliomyelitis, measles, mumps, rubella, haemophilia
- Hepatitis B and C
- E Coli 0157
- Salmonellosis
- Campylobacter Enteritis
- Giardiasis
- Shigellosis
- Influenza
- Sexually transmitted diseases such as gonorrhoea, syphilis, chlamydia
- molds, yeasts and fungi related to respiratory ailments
- legionellosis
- viruses (e.g., enteric viruses, cytomegaloviruses)

Well-Being

Stressors

- Noise
- Odour

Community Wide Initiatives

- Healthy Communities
- Safe Communities
- Healthy Environments
- Sustainable Development

Individual/Group Initiatives

- Recycling
- Green products
- Water conservation
- Others

Source: RMC and input from Public Health Division Staff

EXHIBIT 22

Priority Areas for Program Planning in Alberta

Based on Exposures

- chemical industries,
- oil and gas industry,
- forestry,
- agriculture,
- biotechnology,
- recycling of wastes,
- industrial waste disposal,
- radiation
- indoor air pollution,
- other emerging issues:
  - dioxins, other chemical contaminants and cancer risks
  - low level concentrations of heavy metals, neurotoxicity and risks of developmental delay.

Source: RMC

3.4 INTERAGENCY RESOURCES AND FUNCTIONS

Overview

What are the resources available in the province for dealing with the priority health outcomes of the previous section, and with public concerns? We describe in Volume 2, **Supporting Inventories**, some thirty government departments and agencies at the provincial and federal levels with involvement in environmental health.[19] An example of the extent of this government involvement is shown in Exhibit 23, on the next page. Some of the key provincial environmental health partners for Alberta Health and the local health units shown in this exhibit are (1) Environment, (2) Agriculture, (3) Occupational Health and Safety, (4) Labour, and (5) Public Safety Services.

This section will not attempt to summarize the contributions of all the various departments and agencies. The wide array of resources available in the province can be appreciated by describing here just one example, laboratories with roles in environmental health. Further, the roles of Alberta Health and the health units will be left for the next section of this report.

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[19] The twenty-seven health units and the Environmental Health Services Branch of Alberta Health are incorporated as a single element within this total.

EXHIBIT 23

Examples of Government Departments, Boards and Agencies with Roles Related to Environmental Health

ALBERTA GOVERNMENT

Advanced Education
Agriculture
Environment
Executive Council, Government of Alberta

- *Occupational Health & Safety*
- *Energy Resources Conservation Board*
- *Alberta Public Safety Services*
- *Water Resources Commission*

Forestry, Lands & Wildlife
Health
Labour
Municipal Affairs
Public Works, Supply & Services
Recreation and Parks
Technology, Research & Telecommunications
Tourism

FEDERAL GOVERNMENT

National Health & Welfare

RELATED SERVICES/PROGRAMS/ORGANIZATIONS

Public Health Advisory & Appeal Board
Environment Council of Alberta
Alberta Round Table on Environment and Economy
Alberta Research Council

See: **Volume 2, Supporting Inventories**

3.4 INTERAGENCY RESOURCES AND FUNCTIONS continued...

We will comment particularly on the roles of the main (five) partners of Alberta Health, noted previously, and also offer comments on the role of Health and Welfare Canada.

Laboratory Support for Environmental Health Services

All partners concerned with environmental health matters, including the local health units, must rely on the technical support provided by scientific laboratories in order to analyze problems, to plan effectively and to deliver programs. Laboratories are a particularly interesting resource because they require a critical mass of highly skilled, usually scarce human resources, in addition to highly sophisticated and costly equipment. In short, they are an excellent example of where intersectoral cooperation and coordination can be achieved. The provincial laboratories most used to support environmental health programs to the public fall under three different jurisdictions: Alberta Agriculture, Alberta Environment and Alberta Health.

Laboratory Services from Alberta Environment

The Alberta Environmental Centre in Vegreville, a division of Alberta Environment, maintains extensive research and analysis resources in toxicology, and programs related to health. These are displayed in Exhibit 24, on the next page.

Analytical Services (Water) is one particularly important service for the health units. Analytical services include the routine testing of water. Each year some 8,000 to 10,000 water samples are tested, originating from public health units or as a result of investigations under the Alberta Clean Water Act. The program also provides analytical support for research programs related to water quality and provides consulting expertise for enforcement and other related activities by various departments.

The growth in demand from the health units for this service has required the Centre to establish quotas and to consider the possibility of fees for such tests. We understand the quota is considerably less than the number of samples submitted ten years ago.

EXHIBIT 24

Health Related Research and Service Activities at The Alberta Environmental Centre, Vegreville
An Example of a Partnership at the Core

- *Insect Diagnostic and Extension Services* - a reference service for the identification of insect pests and advice on control measures, including those suspect as household, food storage and structural pests and as human parasites.
- *Technology Development in Waste Management* - a program to develop and assess environmentally sound technologies for waste management, including the validation of public concerns regarding risks associated with siting and operation of waste management operations.
- *Potable Water Technology Research and Development* - a program to improve the safety quality and quantity and availability of potable water supplies, one focus of which is the minimization of the impact of industrial effluents on downstream municipal water treatment systems.
- *Inhalation Toxicology Research* - a program to determine potentially toxic effects of inhaled gases, vapours, particulates and aerosols in experimental animals, and by extrapolation, humans, with special interests in hydrogen sulphide effects.
- *Toxicology of Petrochemicals and Fossil Fuels* - a program to determine the toxicology of crude oil, heavy oils, bitumen, drilling devices and waste products, refined petroleum products, processed chemicals and combustion products under laboratory and field conditions.
- *Toxicology of Biocides* - a program to study the effects of agricultural and other pest control chemicals on non-target species.
- *Chemical Safety Evaluation* - a program to conduct comprehensive safety evaluation studies of chemical and biological substances of significant environmental concern.
- *Aquatic Toxicology* - a program to determine the actual or potential deleterious effects of industrial municipal or agricultural waste waters.
- *Chemical Residues* - a program to determine distribution and concentration of environmentally significant organic and inorganic chemical residues in Alberta.
- *Analytical Services (Air)* - a program to provide an advanced level of analytical service in support of the Clean Air Act and related problems involving physical and chemical contaminants in the air.
- *Analytical Services (Water)* - a program to provide advanced services for the chemical analysis of water, both for verifying the quality of drinking water and assessing the effects of industrial effluents on receiving waters.
- *Trace Organic Analysis and Methods Development* - a program to provide advanced analysis for organic chemicals in water, effluents, soil, sediment, biota and other matrices.

Source: Alberta Environmental Centre; 1990.

3.4 INTERAGENCY RESOURCES AND FUNCTIONS continued...

Laboratory Services from Alberta Agriculture

Alberta Agriculture provides laboratory services for testing food quality in support of its role in the production of high quality food for the Alberta market or for export. The bacterial and chemical testing of food samples for quality and contaminants is carried out by the Food Laboratory. The laboratory which had its origins in the 1950s is presently at the O.S. Longman Building in Edmonton. Clients of the laboratory are from the agriculture and health sectors, and the public. Some 3,000 samples are analyzed annually, about 10% coming from local health units. In addition, Alberta Agriculture operates laboratories for veterinary diagnosis. They interface with Agriculture Canada in the reporting of brucellosis, tuberculosis, and rabies.

Laboratory Services from Alberta Health

The Provincial Laboratory of Public Health (PLPH) was established in 1907. It was originally under Agriculture. It is now under the jurisdiction of Alberta Health under contract to the University of Alberta in Edmonton and the Foothills Hospital in Calgary. A study commissioned by Alberta Health is presently underway to review the operations of the PLPH system, including its cost-effectiveness and the degree to which it satisfies clients and meets their needs.

The present role of the PLPH is that of a reference laboratory in the field of microbiology. It provides specialized diagnostic microbiology services, environmental microbiology, communicable disease surveillance, outbreak investigation, research and development, and training services.

The PLPH does not conduct chemical testing of water of the type done at the Vegreville Environmental Centre nor food quality of the type at the Longman Laboratory. The PLPH serves all health units, health agencies (federal and provincial) and hospitals in Alberta, Northwest Territories and Yukon Territory, and provides consultation service in environmental microbiology to government agencies, hospitals and the private sector.

Environmental microbiology services include examinations of (1) **water** - drinking water (municipal, public and private supplies), recreational water (beaches, swimming pools, whirlpools), rivers and creeks; (2) **food samples and clinical samples** - involved in suspect food borne illness or outbreaks, and with other divisions of their laboratory can undertake viral and parasitic examination; (3) **environmental swabs, distilled water samples, bottled water and other specimens** - submitted by hospitals and institutions.

3.4 INTERAGENCY RESOURCES AND FUNCTIONS continued...

The PLPH serves as the point of access to other national and international reference laboratories, such as the Laboratory Centre for Disease Control operated by Health and Welfare Canada, Ottawa.

Is the Present Arrangement of Laboratory Services Appropriate?

Although we heard no complaints from health units about the technical quality of services, we did hear concerns about quotas for routine water testing at the Alberta Environmental Centre in Vegreville. We were advised that this program is not in the mainstream interest of the Centre and that it would perhaps be more appropriate for such testing to be done elsewhere.

The present databases on results of routine water analysis may have untapped potential. Recently, a series of public workshops and a conference in Northern Alberta rated groundwater concerns first out of ten priority water issues. The database created by routine water analyses at the Environmental Centre is large and may be an underestimated tool for research on groundwater trends in Alberta.

The suggestion was made to us that the PLPH also could conduct routine chemical and bacterial quality testing of food samples where there was a possible threat to public health. Presently, such testing is carried out by Alberta Agriculture. This consolidation was believed to be an effective way to meet the service needs of the public health units, potentially with economic, manpower, quality and control benefits.

Some of the Provincial Partners of Alberta Health and the Health Units

The following is a brief outline, based on inventory material in Volume 2, of the roles of five provincial departments that are partners with Alberta Health in matters of environmental health.

Alberta Environment is responsible for the coordination of the policies, programs, services, and administrative procedures of departments and agencies of the Government of Alberta in matters pertaining to the environment. It may undertake activities necessary to promote improvement of the environment for the benefit of the people of Alberta now and in the future. Human health is not a clearly defined responsibility under statutes administered by this Department. It is a consideration in the way the Department carries out its mandate and constitutes an area of interface between that Department and the Environmental Health Services Branch of Alberta Health, and the local health units.

3.4 INTERAGENCY RESOURCES AND FUNCTIONS continued...

The main programs under Alberta Environment are (1) *Environmental Protection Enhancement and Research,* (2) *Water Resources Management,* (3) assistance to the *Alberta Special Waste Management Corporation,* (4) support to the *Environment Council of Alberta,* (5) *Water Resources Revolving Fund,* and (6) development and introduction of the new *Alberta Environmental Protection and Enhancement Act.*

Alberta Agriculture is responsible for the management of programs in support of the agricultural industry, agricultural resources and those engaged in agriculture. Protection of human health is a consideration in pursuing the mandate of the department and is the focus of many of its inspection, disease control and safety programs.

In addition to the Food Laboratory program noted previously, Alberta Agriculture offers several other programs related to the protection of human health. These include: dairy farm and processing plant inspection; zoonotic disease control at field and laboratory levels; meat inspection; pest control; farm safety; green certificate; home economics services; and district agriculturist and home economist services.

Alberta Occupational Health and Safety is responsible for preventing work-related accidents and ill health. It promotes the adoption by industry of programs and activities to foster safe and healthy workplace environments.

Through six regional offices and a staff of generalist and specialist occupational health and safety professionals, a full range of programs and services is provided for the protection and promotion of health and safety at Alberta worksites. These programs and services include: worksite inspection; accident, incident and complaint investigation; worksite education and preventive programs; advisory and consultative services; library, audiovisual and statistical services; grant funding in support of research, training and educational activities; standards and regulations development; and interpretation and enforcement of legislation.

Coordination and consultation with organizations representing workers and employers, with special interest groups and with other government agencies form part of the development and implementation of preventive and promotional strategies.

Alberta Labour is responsible for programs designed to assure a high degree of safety for the public. These include standards, inspection, research and education. The Department encourages the development of effective and responsible relationships between labour and management; ensures the protection of rights of employees and individuals.

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3.4 INTERAGENCY RESOURCES AND FUNCTIONS continued...

The main program of Alberta Labour related to environmental health is the General Safety Services Program. In addition, the Department is developing the new Uniform General Safety Act to be introduced in 1991. That legislation will establish a unified Risk Management System for Alberta which, at the present time, is contained in seven different statutes.

The General Safety Services Program aims to enhance the safety of life and property through the coordinated delivery of programs encouraging and facilitating acceptable safety standards including fire prevention, building construction, elevators and amusement rides, plumbing, gas and electrical equipment and installations, and boilers and pressure vessels. Subprograms are delivered by professional inspectors, investigators, advisors and instructors through head office, thirteen regional offices and a fire training school.

Alberta Public Safety Services is responsible for a provincial program of preparedness for and response to emergencies and disasters; assistance to municipalities in developing local emergency plans and for improving safety in the transportation, handling and storage of dangerous goods. The dissemination of information to industry, municipal governments and the public on matters pertaining to the dangerous good programs, civil emergencies and public safety is also a central role of this agency.

Services are delivered through seven field offices. Direct contact is maintained with municipal officials to advise and assist in the development and maintenance of preparation and response to emergencies and disasters. Through a central information centre and five inspection offices throughout the Province, direct contact is maintained with industry to ensure compliance with the federal and Provincial regulatory standards relevant to the handling, storage and transportation of dangerous goods within the Province.

The four key programs through which Alberta Public Safety Services supports environmental health are (1) *Disaster Services Training School*; (2) *Emergency Response Program*; (3) *Dangerous Goods Program*; (4) *Provincial Disasters Program.*

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3.4 INTERAGENCY RESOURCES AND FUNCTIONS continued...

A Federal Partner

We wish to emphasize the existing relationship between Alberta Health and Health and Welfare Canada in the area of environmental health, and opportunities for future collaboration with this federal partner. The Health Protection Branch of Health and Welfare Canada is mandated to protect Canadians from hazards to health and life that are found in food, pharmaceuticals and cosmetics, in medical or radiation emitting devices, and in the environment. The Health Protection Branch is involved in a wide range of activities that include advisory, regulatory, surveillance, and enforcement functions. It has six directorates: (1) Drugs, (2) Food, (3) Environmental Health, (4) Laboratory Centre for Disease Control, (5) Field Operations, and (6) Federal Centre for AIDS. Links between the Public Health Division of Alberta Health and the Health Protection Branch exist through joint involvement in a number of areas including:

- the federal/provincial Advisory Committee on Environmental and Occupational Health;
- the Workplace Hazardous Materials Information System (WHMIS) program and other information data bases (see section 4.1);
- the Laboratory Centre for Disease Control, which is the Canadian reference for the Alberta Provincial Laboratory of Public Health;
- the food and hazardous products advisory programs of the Field Operations Directorate.

Opportunities for future collaboration are excellent and welcomed by Health and Welfare Canada, extending through developing formal agreements, participating in future planning, and possibly exchanging or seconding personnel on a short term basis. In addition to having extensive epidemiological, toxicological, and highly specialized laboratory resources, the Health Protection Branch maintains ongoing international linkages in environmental health. In cases where questions cannot be adequately addressed in Canada, the Health Protection Branch can access quickly a world-wide network of experts to obtain necessary assistance. The Health Protection Branch has leading expertise in scientific risk determination as previously cited. Opportunities exist for the Environmental Health Services Branch in Alberta Health to take advantage of the experience of this federal partner to expand its own early initiatives to help place environmental health programs in Alberta on a rational basis using risk determination techniques.

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EXHIBIT 25

Strengths as Perceived by Persons Outside the Present Delivery System

It [the environmental health delivery system] *operates at the community level.*

...

The present system, with the exception of native communities, maintains a high standard of traditional public health protection in most areas of the province. These services are provided by a substantial infrastructure at an accessible local level which is generally appreciated and respected by average citizens. The supporting health care system in Alberta is accessible and of a generally high calibre. Likewise, much useful data on health status of Albertans is accessible.

...

Existing environmental health services are not generally regarded by the public with suspicion and distrust in contrast to Alberta Environment which has generally earned a reputation as a defender of polluters rather than as an effective regulator thereof.

...

There is increased awareness, concern and interest in environmental health by government and the private sector.

...

With the introduction of the new Environmental Protection and Enhancement Act and the legislation establishing the Natural Resources Conservation Board, I believe it may be said (certainly, the proponents of these new initiatives would say) that Alberta will have the most stringent rules for environmental protection in Canada, maybe even in the world. So the new (pending) legislation would have to be seen as one of the more significant strengths of the present system.

Source: Briefs to RMC Resources Management Consultants Ltd. from Stakeholders, 1990.

3.5 ASSESSMENT OF THE PRESENT INTERAGENCY ARRANGEMENTS

There are strengths and weaknesses associated with the wide array of environmental health resources throughout the province. The Calvin Lee Report, for example, outlined problems evident in 1986 (p 33). We now review current perceptions on the matter.

Strengths Perceived by Provincial Partners of Alberta Health

Among the many stakeholder interviews and briefs submitted, four areas of strength were identified from the perspective of persons outside Alberta Health and the local health units (Exhibit 25):

1. Responsibility at the local level for service delivery;
2. Quality of services;
3. Growing public awareness of environmental health; and
4. The new legislative initiatives for environmental protection.

Weaknesses Perceived by Provincial Partners of Alberta Health

The weaknesses of present arrangements as seen by those outside the health system are summarized in Exhibit 26, on the next page. Typical concerns had to do with

1. *lack of direction* at an interdepartmental level;
2. *lack of a unified voice* and confused information;
3. *lack of uniformity in applying standards* because of local health unit autonomy;
4. *absence of technical resources and skills to deal with new health issues* at both the health units and Alberta Health;
5. *compromised ability to respond to a more informed public* on environmental changes and their effects;
6. *weak environmental impact assessment procedures* and a lack of scientific understanding and agreement.

Conclusions

We make the following conclusions about present interagency arrangements in Alberta based on our review.

1. Under the current system the provincial core is dispersed. It is characterized by weak partnerships and virtually no system control elements. It is the product of an evolution over some decades of responding to various governmental and administrative situations.

EXHIBIT 26

Weakness as Perceived by Persons Outside the Present Delivery System

The apparent confusion, or lack of direction, as to the inter-governmental jurisdiction for various aspects of environmental protection would seem to be a major weakness of the present system. I believe the recent experience with the Alpac application illustrated this defect. ... I suspect that the public may be beginning to tire of the public wrangle over jurisdiction and expect "governments" to get on with it.

The obvious weakness is that environmental health concerns and responsibilities appear to be scattered among various government departments (e.g. Health, Occupational Health and Safety, Environment, etc.). As public concern increases, there is no one voice addressing these concerns which sometimes results in conflicting and varied information being given to the public.

...

There is a lack of uniformity of application of standards, cooperation, priorities, etc. throughout the province. Local public health inspections seem to have a great deal of autonomy and therefore diversity/inconsistency.

...

Health units are also not capable of satisfying the technical requirements associated with their responsibilities under the Waste Management Regulations of the Public Health Act, particularly when matters other than domestic refuse must be addressed.

...

The present system is not equipped to deal with environmental health issues which fall outside of traditional public health concerns (i.e. traditional water and food sanitation, nuisance control). Neither local nor centralized staff are equipped to deal with public questions or concerns about health risks associated with issues arising from industrial, commercial or agricultural activities; chemical, physical or biological contaminant exposures; etc. When inquiries are made by the public, they are often put "on hold" while local staff try to locate someone who can respond in an informed manner.

While the present system of autonomous public health boards is able to deal with the local issues, the boards may suffer from lack of appropriate technical support in environmental health areas and the lack of focus on prevention. The ability to delivery preventive services and to comment credibly on the changes in the environment are therefore, adversely affected. In future though the government's effectiveness may well be measured by its ability to interact with a more informed public in a credible fashion.

Another area of weakness would seem to lie in the realm of science and technology. There are many areas of disagreement within the scientific community as to what substances in the environment are toxic - what levels of concentration must prevail over what kinds of time periods in order to produce harmful effects, etc., (e.g.) concentrations of dioxins and furans in surface water bodies and their effect on aquatic organisms and human health.

...

Environmental impact assessment procedures in Alberta have been extremely weak in both scientific and public credibility. Even in other jurisdictions with more effective environmental impact assessment procedures, health implications are generally ignored or given token treatment in the impact assessment process.

Source: Briefs to RMC Resources Management Consultants Ltd. from Stakeholders; 1990.

3.5 ASSESSMENT OF THE PRESENT INTERAGENCY ARRANGEMENTS continued...

2. There are only partial coordination mechanisms between Alberta Health and other government departments and agencies, but their mandates and jurisdictions have not been harmonized and rationalized. Voluntary and often bilateral relationships have emerged instead, but they are often characterized by conflict for lack of an arbiter.

3. The existence of gaps in programming which allow matters to "fall between the cracks" is indicative of a non-systems approach and the lack of an interdepartmental overview. This lack of systemic provisions needs to be addressed by future corrective efforts.

4. The study has noted possibilities for improvement within the framework of voluntary action, but these should be recognized as somewhat fragile, unless based on real authority.

3.6 ALBERTA HEALTH AND THE LOCAL HEALTH UNITS

3.6.1 Overview of Mandating Legislation

Mandate for the Provision of Environmental Health Services

The delivery of environmental health services by Alberta Health through the twenty-seven local health units is mandated by the Public Health Act (RSA 1984c cP-27.1) and its regulations. The Department of Health Act (RSA 1989 cD-21.5) includes provision for the Minister of Health *to take or direct measures he considers appropriate to prevent and suppress disease*. It also enables the provision of environmental health services (s8).

The Public Health Act

Under the Public Health Act (PHA), any area of Alberta may be established as a health unit by the Lieutenant Governor in Council. A health unit is to be administered by a local board. The members of a local board are generally appointed by councils of municipalities whose boundaries directly relate to health unit boundaries (s11,12). Board members can be appointed by the Minister if a council or councils does/do not make the required appointments (s13).

EXHIBIT 27

Regulated Matters Under the Public Health Act RSA 1984 cP-27.1

Alberta Aids to Daily Living and Extended Health Benefits
Barbershop and Beauty Culture Parlors
Bodies of Deceased Persons
Communicable Diseases
Coordinated Home Care
Financial Administration
Food *
Forms
Housing
Institutions
Livestock and Poultry (Keeping of) *
Milk Standards (Fluid)
Nuisance and General Sanitation *
Public Nomination
Qualifications of Inspectors
Recreation Area *
Regulated Matter
Swimming Pool *
Treatment Services
Waiver
Waste Management *
Work Camps *

Note:
Regulations noted with an asterisk are cited in the Waiver Regulation 249/85 subsection 1(1). This subsection permits persons to whom a provision of any of the regulations with an asterisk apply (except subsection 10 of the Swimming Pool Regulation), to apply to a local board for an order waiving or mitigating the application of the provision. Subject to the hearing and other provisions of the Waiver Regulation, the local board may grant such an order. The number of waivers granted is small compared to the number of regulatory decisions made.

3.6.1 Overview of Mandating Legislation continued...

The PHA establishes local boards as autonomous bodies with the obligation and the possibility to provide *health promotional, preventive, diagnostic, treatment, rehabilitative, and palliative services, supplies, equipment and care* (s20) that regulations require or permit. The PHA has extensive provisions regarding the notification and control of communicable disease. It also makes provisions for dealing with a "nuisance" defined as *a condition that is or that might become injurious or dangerous to the public health, or that might hinder in any manner the prevention or suppression of disease* (subsection (1r)). A local board has the obligation of appointing a physician member of its staff as a medical officer of health; of designating a member of its staff as an "executive officer" (a public health inspector); and of designating a member of its staff as a chief executive officer. The latter is responsible for the management and administration of the health unit and its programs and services (s17).

Public health inspectors have powers to investigate a nuisance and to issue orders to abate it (s69,70,71,72).

Powers of the Minister Under the PHA

The autonomous powers delegated by government to the local board under the PHA are reversible. For example, the Minister may, for cause, dismiss a local board and appoint an official administrator in its place (s24). If there is no health unit in an area or if an existing board is unable to do so, the Minister may provide any of the programs and services of a local board (s22). As well, the Lieutenant Governor in Council may alter boundaries and disestablish a health unit (s10). The Minister may delegate any power under the PHA or its regulations, except the power to make regulations, to an employee of Alberta Health or an officer or employee of an agent of the Crown in the right of Alberta. The Minister also may designate a physician employed by Alberta Health as a medical officer of health for dealing with communicable disease matters under the Act, and may designate an employee of Alberta Health as an executive officer for the purposes of the Act.

Regulated Matters Under the PHA

Matters regulated under the PHA are displayed in Exhibit 27. While some regulations have nothing to do with environmental health (the Treatment Service Regulation) most - directly or indirectly - involve environmental health as considered in this report. This reflects the importance of *intra* departmental coordination with Alberta Health, particularly within the Public Health Division.

3.6.1 Overview of Mandating Legislation continued...

Of particular interest is the Waiver Regulation (249/85) which permits a person affected by any of seven specified regulations under the Act to apply to the local board for a decision to waive or mitigate the application of the provision (Exhibit 27, p 78). Subject to provisions of this regulation, which include holding a hearing by the board to consider the request, the board may grant an order waiving or mitigating the application of a provision of any of these regulations. Provisions under subsection 10 of the Swimming Pool Regulation are excepted from waivers. The actual number of waivers is small compared to the number of regulatory decisions made.

Public Health Advisory and Appeal Board (PHAAB)

Under the Board is established by Order in Council. The duties of PHAAB are to (1) advise the Minister on public health matters; (2) at the request of the Minister, conduct investigation and research into any matter relating to its mandate; (3) hold public hearings, upon direction by Order in Council; (4) hear appeals from aggrieved persons, directly affected by a licensing permit or approval decisions or other decisions subject to appeal as provided for in regulations of a local board, or directly affected by a Public Health Inspector order under section 72 of the Act. In essence, the PHAAB deals primarily with environmental health concerns and adjudicates the decisions of health unit boards when they become the subject of an appeal.

Paramountcy

The PHA prevails over any Act with which it conflicts except the Alberta Bill of Rights, and regulations under the PHA prevail over any by-law, rule or order with which they conflict (s83). This provides the Minister of Health and the health unit boards with potentially strong powers in terms of environmental health protection.

Revisions to the PHA and Regulations

The present PHA was proclaimed August 1, 1985 after revisions to prior legislation. Regulations under the PHA, however, have not reviewed and updated despite commitments to do so upon proclamation of the new *Act*.

It appears conflicts about process among staff of the field, the Branch, and the legislative Research and Planning Branch of the Policy and Planning Division affected intended progress. These conflicts affected the priority given to updating the regulations by staff at the legislative Research and Planning Branch, in view of demands on their time for dealing with other health legislation.

3.6.2 The Public Health Division of Alberta Health

Branches of the Public Health Division

The functions and resources of the Public Health Division of Alberta Health are described in the **Supporting Inventories** of Volume 2. In brief, the Division comprises the following Branches:

- Home Care/Community Long Term Care,
- Environmental Health Services,
- Communicable Disease Control and Epidemiology,
- Health Promotion,
- Family Health,
- Alberta Aids to Daily Living/Extended Health Benefits (AADL/EHB), and
- Program Support.

Environmental Health Functions in Public Health Division Branches

With the possible exclusion of the Home Care/Community Long Term Care Branch - whose functions could be considered mainly treatment oriented, many functions of each of the other branches are concerned with ways social and physical environments affect human health - that is, how these environments are concerned with environmental health. That some branches include such environmental health functions is obvious: for example, the Environmental Health Services Branch (section 3.5.3, following); and the Communicable Disease Control and Epidemiology Branch (CDC/E). We note CDC/E includes expertise in the epidemiology of communicable and chronic diseases. AIDS, Sexually Transmitted Disease Control, and Tuberculosis Services are the largest service units of this branch. Each of these units deal with problems that distinctly involve social environments and their human health impacts.

Other branches also have environmental health functions, in that they are concerned with ensuring healthy social environments. Family Health, for example, provides support in nutrition, dental health, speech and language, sexual health, early intervention, community health nursing. AADL/EHB, on the other hand, helps people with various physical disabilities adapt their physical environments, and provides other aids to optimize functioning and hence, improve health and well-being.

Health Promotion is a new branch whose initiatives contributed recently to a study on future directions at Alberta Health in health promotion. This branch also played a role leading to the identification of children and seniors as target populations for health promotion programs aimed at reducing injuries.

EXHIBIT 28

Role and Goals of the Environmental Health, Health Services Branch, Alberta Health

Branch Role Statement

The Environmental Health Services Branch serves both as a source of expertise, coordination and leadership within Alberta Health on matters related to the impact of environmental factors on human health and as the main point of contact on these matters with local boards of health and other provincial and federal departments and agencies.

Program Goals

- To provide consultative support and expertise on environmental health matters to the Minister, to senior management staff and to other organizational units of Alberta Health as required.
- To respond to requests for action and correspondence in a timely and complete manner.
- To assist local boards of health (health units) in program delivery by providing information, support, guidance and direction as required.
- To promote the development of knowledge and expertise in responding to environmental health concerns; to indicate priorities for research and studies.
- To develop and update guidelines and standards of practice for the use of health units, institutions and agencies and to produce and publish information on issues of concern to the general public.
- To continually review and update the provisions of the Public Health Act and the various regulations dealing with environmental health.
- To review the resource requirements for the operation of environmental health programs in the field and provide input into the budgetary process.
- To serve on committees and ensure liaison with provincial and federal departments and agencies including, but not limited to: Alberta Environment, Alberta Occupational Health and Safety, Alberta Public Safety Services, Alberta Municipal Affairs, Alberta Agriculture, Health and Welfare Canada, Environment Canada, and so forth.

Project Goals

- To provide administrative support and guidance in the implementation of Section 43 of the Food Regulation to ensure the appropriate training and qualification of food handling personnel.
- To carry out a comprehensive strategic planning process for environmental health; to identify major risks and problems, program gaps and deficiencies and to develop improved coordination and role definition between the health system and a wide range of government departments, provincial agencies and professional groups.
- To develop and publish provincial guidelines for the appropriate handling and disposal of biomedical waste, to pursue appropriate amendments to the Waste Management Regulations.
- To provide effective follow-up to the recommendations of the Public Health Advisory and Appeal Board with the respect to intensive livestock operations.
- To participate in the development of corporate goals and policy statements in response to the Premier's Commission Report.
- To support and expedite the development of information systems and data collection in support of environmental health programs.

Source: **Alberta Health, Mission Statement, *Alberta Environmental Health Services Role Statement*, 1990**

3.6.2 The Public Health Division of Alberta Health continued...

The Program Support Branch provides administrative support to a number of areas: (1) the Assistant Deputy Minister's office of the Division; (2) the Public Health Advisory and Appeal Board (PHAAB); and (3) consultant and management services in finance and accommodation, particularly to the twenty-seven health units. Responsibility for administering the contract for services of the Provincial Laboratories of Public Health, and participating in certain federal/provincial liaison in the public health area also rest with this Branch. Its Director is a member, for example, of the Community Health Information working group (Chapter 4, following).

Two Keys to Effective Environmental Health Programming

At least two conditions are necessary for the Division to marshall coherently this array of resources for effective environmental health programming. The first, is that there be a shared understanding throughout the Division of the wider definition of health, its determinants, and the meaning of "environmental health" - the ways in which human health is affected by factors in our social and physical environments (Exhibits 4-9, Chapter 2, p 10, following). The second, is that there be effective *intra* sectoral cooperation and coordination - between branches within the Division.

These conditions presently do not appear to be met. As a result, environmental health in the Division appears fragmented, and the Environmental Health Services Branch, weakened and isolated.

3.6.3 The Environmental Health Services Branch (EHSB)

Role and Resources

The role and goals of the EHSB, as presently conceived, are displayed in Exhibit 28. The Branch role statement in this exhibit reflects the historic function of providing *expert support* at the provincial core for *local delivery* by the health units. The Branch also serves as the main point of contact for other federal and provincial agencies.

The staff complement is small: four professional environmental health staff, a Director, one programmer, one administrative assistant and one secretary. The professional staff complement of the EHSB is, in fact, two to three less than recommended in the 1977 Grainge Report (p 31): one environmental engineer, one food and microbiology specialist, one Manager of Operations, and one Environmental Health Consultant. The latter two individuals have Public Health Inspector credentials. (An organization chart for the Branch and associated information is found in the **Supporting Inventories** in Volume 2).

3.6.3 The Environmental Health Services Branch (EHSB) continued...

Fiscal resources are also limited. The 1989/90 budget was about $7 million, of which approximately $400,000 was for direct Branch operations, and $6.6 million for environmental health programming at the health units.

Branch Accomplishments

A number of Branch accomplishments followed the Grainge Report and the general implementation of its recruitment recommendations. Among these are:

- *extensive personnel training* - in environmental health law, indoor air quality, food microbiology and modern control methods, swimming pool operations, new communicable diseases, biomedical wastes, solid waste management. Conducted by Branch staff, some of this training concludes with examinations and offers certificates: week-long courses on enforcement for health inspectors, the food handler training program formalized under the Food Regulation. Branch staff produced course materials and delivered training;

- *developing computerized information systems* - for monitoring food premises, inspections, and food microbiological analysis; and for solid waste management;

- *achieving international recognition for expertise in swimming pools* - partly through the development of the technologically advanced, Swimming Pool Regulation that has virtually eliminated disease complaints with pools;

- *contributing to reviews of environmental impact assessments* - in support of other departments/agencies;

- *participating in interdepartmental committees* - on food inspection, pesticides, biotechnology;

- *publishing a Branch newsletter* - since 1989, with desktop publishing;

- *responding to "action requests"* - from the Minister and senior corporate level of Alberta Health for draft responses to correspondence, briefing on issues, notes for speeches.

EXHIBIT 29

Health Unit Funding
Summary for Five Year Period[1]
1986/87 to 1990/91

Program Names	1986/87	1987/88	1988/89	1989/90	1990/91	Change 1986/87-1990/91
Nursing	$26,592,736	$25,831,420	$27,240,167	$28,348,133	$32,797,340	$ 6,204,604
Home Care	31,865,578	31,299,457	36,205,388	42,659,143	48,078,177	16,212,599
Dental Health	6,566,207	6,223,213	6,476,659	6,711,812	6,883,610	317,403
Environmental Health	6,056,953	5,924,723	6,256,298	6,620,911	6,849,722	792,769
Alberta Aids to Daily Living	1,059,788	1,007,292	1,044,764	1,077,864	1,105,310	45,522
Reproductive Health	-	-	1,076,171	2,575,770	2,642,195	2,642,195
Speech Therapy	3,231,317	3,232,227	3,371,559	8,256,675	11,126,634	7,895,317
Sub Total	**75,372,579**	**73,518,332**	**81,671,006**	**96,250,308**	**109,482,988**	**34,110,409**
Auxiliary Programs[2]	5,919,151	5,703,882	5,976,836	4,762,942	4,900,355	(1,018,796)
Administration	10,241,869	10,437,794	11,158,350	11,883,579	12,656,702	2,414,833
Total Operating	**91,533,599**	**89,660,008**	**98,806,192**	**112,896,829**	**127,040,045**	**35,506,446**
Total Accommodation	9,491,738	9,145,161	9,652,554	10,231,959	11,214,128	1,722,390
Total Annualized Funding	**101,025,337**	**98,805,169**	**108,458,746**	**123,128,788**	**138,254,173**	**37,228,836**
Total Non-Annualized Funding[3]	**1,237,844**	**1,193,446**	**6,676,758**	**4,351,612**	**1,078,041**	**(159,803)**
Health Unit Total	**$102,263,181**	**$99,998,615**	**$115,135,504**	**$127,480,400**	**$139,332,214**	**$37,069,033**
Environmental Health as a Proportion of Health Unit Total	5.9%	5.9%	5.4%	5.2%	4.9%	

Notes:

1. **During 1986/87, Health Units reclassified administration expenses to the applicable programs.**
2. **Auxiliary programs include various programs, with *health education* accounting for the largest share in 1990/91, 26.0%.**
3. **Non-annualized funding is for *students*, *special projects* and *other*.**

Source: Alberta Health, Public Health Division

3.6.3 The Environmental Health Services Branch (EHSB) continued...

Expanding Demands for Expert Support

The Grainge Report continued the historic Branch role of *expert support* at the provincial core to *local delivery* at the health units. It did not anticipate the importance of another Branch role, provision of expert support *to* the provincial core - to the Minister of Health and corporate levels of Alberta Health. In 1980, the Branch handled 70 "action requests". By 1987/88 the number grew to 400, a level where it presently stands. Consistently, the number of such requests has been 20% of the total received by the Public Health Division. Not only did the number of requests increase five-fold in a decade, the requests themselves became more complex. The number of staff and range of expertise in the Branch to respond to them did not change.

Implications of Limited Branch Resources

The Minister and corporate levels of Alberta Health now compete with the health units for a scarce resource: expert advice of Branch staff on the impact of environmental factors on human health. In view of the small complement of staff and the restricted number of disciplines represented in it, three implications follow.

- The health units are loosing out in the competition. They cannot get the same degree of access to Branch staff that the Minister and the corporate level of Alberta Health can.

- Neither group is getting the level of expertise it needs in many areas in order to deal with a more sophisticated and aware public, which is increasingly concerned with the more subtle impacts of modern technology on human health and well-being.

- The role of providing *leadership and coordination* within Alberta Health in environmental health matters, as reflected in the Branch's role statement, is impossible to sustain.

3.6.4 Services of the Local Health Units and Environmental Health Programs

Funding Levels for Environmental Health

The twenty-seven public health units deliver locally the majority of public health services funded by the Public Health Division. While the mandate of this study did not extend to on-site reviews of health unit operations, data from the Public Health Division and participation by study team members in two workshops with health unit representatives (Appendix C) offered valuable insights.

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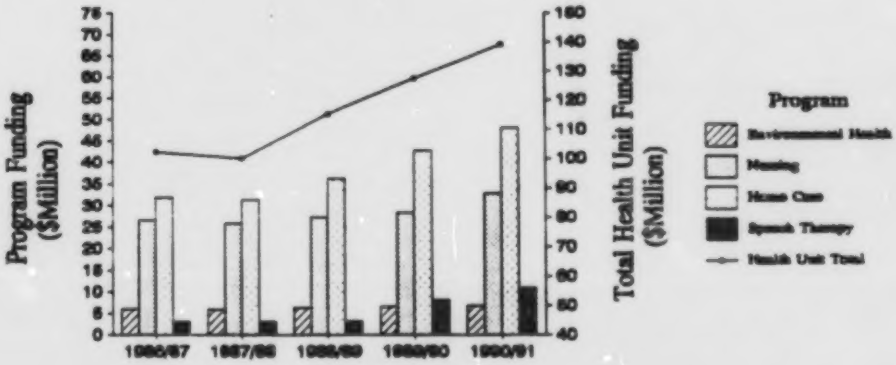
EXHIBIT 30

Health Unit Funding
Summary for Five Year Period
1986/87 to 1990/91



Source: Alberta Health, Public Health Division

Exhibit 29 displays locally delivered programs together with corresponding health unit funding and changes in funding for the period 1986/87 - 1990/91.[20] The relative changes in total funding, and funding for environmental health services, nursing, home care and speech therapy are graphically displayed in Exhibit 30.

The line items identified as "Program Names" in Exhibit 29 reflect disciplines (Nursing) as well as programs (Alberta Aids to Daily Living). The responsibility structure of the branches of the Public Health Division, nevertheless, underlies the line items. Many of the roles and functions implicit in the funded programs of Exhibit 29, therefore, also reflect environmental health activities, as defined in the concepts developed in Chapter 2 and as described in subsection 3.6.2 for the Public Health Division (pp 81, 83).

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[20] Exhibit 29 consolidates "auxiliary programs". In 1990/91 auxiliary programs funded included the following categories: *hereditary disease, early intervention, nutrition, health education, treatment services, T.B. project, V.D. program, medical services, inner city core clinic, research and development.*

3.6.4 Services of the Local Health Units and Environmental Health Programs continued...

Regarding the narrow category of "Environmental Health" programs offered at the health units, as displayed in Exhibits 29 and 30 (pp 85, 87) we note the following observations.

- *Environmental Health represents a small and decreasing share of total health unit funding.*

  In 1990/91 the Environmental Health program at the health units funded through the Environmental Health Services Branch accounted for $6.850 million, representing 4.9% of total health unit funding. This share decreased over the period, from 5.9% to 4.9%.

- *Increases in Environmental Health funding have been small compared to some programs.*

  Increases in funding to Home Care, Nursing and Speech Therapy significantly outpaced - in absolute dollars and in percent - the increase for Environmental Health. During the period, Home Care funding increased by $16.2 million (50.9%), Nursing by $6.2 million (23.3%), Speech Therapy by $7.9 million (244.3%).

  During the same period, Environmental Health only increased by $793 thousand (13.1%). In fact, *increases* in Home Care funding over the period are about 2.4 times the 1990/91 *total* funding for Environmental Health. Increases in Nursing are almost equal to the total funding for Environmental Health.

Pressures for Services

The weak position of Environmental Health at the health units contrasts directly with increasing pressures for services. Local "Environmental Health" functions include routine inspections of restaurants and other food establishments, swimming pools, day care centres, health care institutions, animal premises, water treatment facilities, sewage and waste disposal facilities and other locations. We noted earlier (p 35), the number of such facilities and their sophistication has grown, in fact, in greater proportion than the population. Inspection requirements, therefore, contribute growing pressures on local Environmental Health programs.

These pressures, however, are compounded by a public demand for responding to other issues. Appendix E presents a letter from Calgary Health Services which outlines the situation they face. In particular, the letter describes the wide range of contemporary issues that command time and response. Exhibit 31 offers examples from this letter of these newer issues.

EXHIBIT 31

Example of the Breadth of Contemporary Circumstances Requiring a Response from Public Health Inspectors in a Large Urban Health Unit[1]

Dealing with Development

- Reclamation of old industrial sites.
- New storm sewers discharging into the water supply.
- Minimum separation between landfills and hospitals, restaurants, homes and places which prepare food. Also, minimum separation to gas wells.
- Man-made lakes for recreational purposes and their public health hazard.
- Subdivisions and golf courses within neighbouring municipalities along watersheds that serve municipal water supplies.
- Reclamation standards and guidelines for newly found, old sanitary landfills.

Protecting Public Health in Homes and Buildings

- Assessment of 4,000 development permits per year to evaluate health risks of proposed buildings.
- Air quality in private homes and public places and illness attributed to it.
- Procedures for asbestos removal and replacement of linoleum floor covering with asbestos backing in homes.
- Day Care injury prevention.
- Environmental conditions in schools.

Responding to New Circumstances

- Impacts of a widening range of cultural norms and habits - raising scrub pigeons for food or hobby, taking home of placenta for religious purposes.
- Biological risks of new food production techniques.
- New incompatible chemicals in swimming and/or whirlpools.
- Major white papers such as the Rainbow Report, the Green Plan, etc.

Source: Calgary Health Services, October 1990. (see Appendix F in this report for an elaboration of 28 issues)

Note: 1 These are in addition to issues arising from traditional public health inspections of a wide and growing range of food establishments, institutions, water treatment and other facilities.

3.6.4 Services of the Local Health Units and Environmental Health Programs continued...

The basis for investigating such matters is a requirement of the Public Health Act to deal with nuisances, that is, conditions that are or might become dangerous to the public health or might hinder in any manner the prevention or suppression of disease. Increasingly, this involves responding to questions about chemical and physical impacts of environmental factors. Dealing with nuisances and responding to contemporary questions from the public commands Environmental Health program resources at many health units to the degree that some are arbitrarily limiting their traditional inspection roles.

We recognise that the functions of Environmental Health in smaller rural health units are at times more varied than in the major urban units, more reflective of a wider approach to the definition of environmental health. The Calgary Health Services letter nevertheless, provides a clear indicator of the need to extend or reconceptualize the domain of Environmental Health, and to deal with the problem of limited resources.

While circumstances vary among the health units, if funding allocation is a measure of relative priority, the pattern of funding to Environmental Health? played in Exhibits 29 and 30 is unfortunate. Despite widespread public concerns about the impact of environmental factors on human health, Environmental Health programs at the health units appear to have attracted little priority in the province. This is particularly the case relative to other programs like Home Care that have managed to gain considerable funding, largely by increasing awareness about their functions and by developing health sector and political advocates for their aims.

3.7 ASSESSMENT OF PRESENT HEALTH SECTOR ARRANGEMENTS

We now add to our assessment of interagency arrangements presented in section 3.5 (pp 75, 77) by focusing on *health sector* arrangements, specifically those involving the Public Health Division, its Environmental Health Services Branch, and the local health units. Our assessment considers present arrangements and capabilities against the methods and proposed priority outcomes of Exhibits 21 and 22 (pp 64, 65 respectively), and strengths and weaknesses our team noted during in its reviews. We also present views from two strategic planning workshops held in Calgary and Edmonton with representatives of the local health units. The workshops were organized around four themes: (1) Scope, Functions, and Mandate; (2) Developing Resources; (3) Internal Cooperation and Coordination; and (4) Extra-Sectoral Cooperation based on sixteen briefs submitted to us by the health units. A record of the discussion in the workshops is found in Appendix C.

3.7 ASSESSMENT OF PRESENT HEALTH SECTOR ARRANGEMENTS continued...

Methods and Outcomes

Prevention remains the main approach taken by the field and the Public Health Division to deal with environmental health. Hazard identification and risk determination have attracted considerable attention in Alberta's public health sector, making it opportune to pursue the systematic application of the Risk Determination Model (Exhibit 14, p 44). The Environmental Health Directorate, Health Protection Branch, Health and Welfare Canada can be of great help to this end in view of their expertise in applying this model. A special opportunity exists to use this model to refine the priorities in the outcome areas of Exhibit 21 (p 64).

Important initiatives and significant interest in health promotion are evident at both Division and health unit levels. While about fifteen health units now have health promotion staff - some part-time - their role in environmental health matters and relationship to Public Health Inspectors remains to be articulated, as does the health promotion role of the Health Inspectors themselves.

The outcome focus of the Branch and the field in environmental health services is still substantively on communicable diseases. While pressures for responding to chemical and physical hazards are significant, there is no commonly held mandate or health agenda to deal with them. As a result, the outcome areas of concerns induced by contaminants and excess radiation, respiratory disease, reproductive outcomes, and stressors such as noise and odour (p 64), are inadequately addressed by Branch and field staff.

Beyond the Environmental Health services of the Branch and the field, both the Public Health Division and programs in health units appear to be addressing cardiovascular disease, HIV/AIDS, Sexually Transmitted Diseases, cancer caused by smoking and other priority outcome areas. Initiatives are emerging in trauma, particularly targeting programs to reduce injuries to children and seniors.

Extending the outcome focus of the Public Health Division and the health units to include well-being through community wide and individual/group initiatives remains an area of opportunity to be realized.

A valuable beginning for a more detailed assessment of public health sector capabilities relative to priority outcome is presented in Appendix F, reproduced from internal Branch documents. The approach developed in this appendix will be helpful in determining detailed program directions for the Branch and many health units.

3.7 ASSESSMENT OF PRESENT HEALTH SECTOR ARRANGEMENTS continued...

Strengths and Weaknesses of Present Arrangements

Input to our study indicates many perceive that decentralized, local delivery of services by autonomous boards is the principal strength of present arrangements. With the local availability of a small but dedicated group of professional Public Health Inspectors employed by boards, there was overwhelming consensus that community needs were being heard, and local problems were being handled in a flexible, often innovative manner. We agree with the benefits of local delivery - noting parenthetically - that it also has its down-side in a province as large in size, as small in population and with as many health units as Alberta.

Province-wide, priority for Environmental Health programs at the health units, however, remains low. This is despite public concerns over the impact of environmental factors on human health, and continued pressures for responding to questions beyond the domain of biological hazards considered by the Grainge Report. The public health inspection function is besieged with the problems of providing traditional inspections of facilities, responding to new problems of chemical, physical and other hazards, and being served by staff with inadequate skill-sets to respond in non-traditional areas.

Based on our reviews of the Environmental Health Services Branch, the successes of the small group of professional staff in implementing many of the directions of the 1977 Grainge Report and coping with day to day activities, attest to staff commitment and perseverance. Branch staff resources are minimal. Besides the problem of too few disciplines to deal with contemporary issues, staff do not have enough time to provide effectively expert support to both the field, and their Minister and Department.

Within the Public Health Division there appears little common vision on environmental health, despite the fact that contemporary definitions of health would suggest environmental health services are offered throughout the Division, not just by the Environmental Health Services Branch. Consequently, *intra* sectoral coordination and cooperation is not as effective as possible; the Branch is isolated and weakened; leadership to the field in environmental health is not forthcoming.

Despite intersectoral coordination problems noted in section 3.5, some successes are evident, partly the result of Branch contributions. Good relationships exist between the Branch and Alberta Agriculture at the Food Laboratory, the Food Processing centre in Leduc, and the Poultry Branch. As well, good relations exist with Building Standards of Alberta Labour. Alberta Health has two officials (outside the Branch) who interact with Public Safety Services and other government departments in the Disaster Services Program. Agreements exist with Health and Welfare Canada on food recalls, with Parks Canada on health units in National Parks, with Alberta Labour and Environment on private sewage disposal, and with Environment on landfills.

3.7 ASSESSMENT OF PRESENT HEALTH SECTOR ARRANGEMENTS continued...

Results of Planning Workshops Involving Health Units

In addition to the assessments noted, the following more detailed points emerged as weaknesses, largely from the two strategic planning workshops with health unit representatives.

- Public health legislation, particularly the Regulations under the Public Health Act requires review and updating.

- While Health desires to have a "seat at the table" where senior level discussions on the health - environment link are at stake, the technical resources at the Environmental Health Services Branch and at the local health units are inadequate, in many cases, to be able to have a meaningful say.

- Local autonomy, while a strength, is also noted by some as a weakness leading to inconsistent application of regulations.

- Local level delivery in small communities serves to intensify political pressures on the Public Health Inspector.

- The unbiased health perspective, and the credibility and capability of local environmental health programs can be at risk or even compromised because of the municipal appointment process to local boards.

- Public Health Inspector resources are strained in the larger health units because of the continuing commitment to routine inspections to meet regulatory requirements, and the growing new needs to deal with chemical and physical hazards, and to advocate on behalf of public health in development hearings and associated land development.

- Skill levels of the Public Health Inspectors in non-traditional public health areas are inadequate.

- Professional staff resources at the Environmental Health Services Branch are so limited that necessary communication and networking with other departments is not being undertaken.

3.7 ASSESSMENT OF PRESENT HEALTH SECTOR ARRANGEMENTS continued...

- Expert technical support by specialists at the Environmental Health Services Branch, the provincial core for the health units, is inadequate, particularly in epidemiology and toxicology to evaluate/identify hazards to human health.

- Information is lacking on community health status and surveillance of key environmental health indicators.

- Interagency coordination is poor between the Meat Hygiene Branch and the Dairy Division of Alberta Agriculture and the Environmental Health Services Branch; and relations between the Branch and the Public Safety Services could be improved.

Summary

In summary terms, present arrangements are strained by limited resources and a conceptual view reflecting a narrow domain of environmental health. While some individuals in the system have a vision of future directions based on a contemporary view of health, there has been an inability to communicate effectively and attract executive, local board, and political advocates to the vision. What is lacking is (1) a *shared* new vision of environmental health, (2) sufficient expertise, and (3) effective management to best utilize resources. This is particularly true at the provincial core in the Public Health Division and its Environmental Health Services Branch. Without these three elements, the present Branch will continue to struggle, and achieve limited effectiveness in its attempts to respond to Ministerial and corporate requirements for information; to provide expert advice to the field; to liaise with other departments and agencies; and to take a seat at the table with major players in the environmental health arena. Without these three elements, the Branch will not be able to provide leadership, as declared in its role statement.

4. THE PRESENT SITUATION II: CROSS-CUTTING THEMES AND ISSUES

We continue our review of the present situation. In this chapter our topics cut across organizational boundaries. We examine the issues of (1) information, (2) intersectoral cooperation, (3) health in environmental impact assessment, (4) standards and local authority, (5) relations with the public, and (6) resources. At the end of this chapter we synthesize our views by assessing overall health authority performance in environmental health against the PAHO and HIPS criteria of section 2.2.

4.1 INFORMATION

4.1.1 Introduction

Intelligence, a Key Function of the Core Element

The acquisition, sharing and use of *intelligence* information with respect to hazards to human health is a key function of health authorities. This function requires competent monitoring of the health situation, sources of hazard, assessment of risks, and the application of scientific and technical information to solve problems of prevention, control, and treatment. Adequate performance of this function is indispensable to ensuring that health implications are properly considered in decisions about development and resource use; it is also essential to relevant, accurate multisectoral collaboration in controlling environmental hazards to human health. While such adequate performance is sometimes constrained by lack of scientific information, health authorities are more commonly constrained by shortfalls in the human and technical resources required to apply existing knowledge and technology.

Information Needs for the Intelligence Function

At the recent conference on **Environmental Health Issues: A Vision for the Future,**[1] environmental health information systems were introduced with the following comments:

> *If environmental health problems are to be identified and resolved effectively, the collection, collation and dissemination of statistics and information on environmental aspects of disease is fundamental. Few such national data bases exist today. What will be our future information needs and how will we access them? Will national data collection systems be established within government or independently? Institutional barriers to such systems would have to be overcome.*

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[1] Environmental Health Issues: A Vision for the Future, sponsored by the Canadian Public Health Association with the Support of Environment Canada, the Federal Environment Assessment Review Office, the Canadian Environmental Assessment Research Council, and the Health Protection Branch of Health and Welfare Canada; Preliminary Program; Toronto, Ontario; October 17-19, 1990.

4.1.1 Introduction continued...

> *and questions of confidentiality of administrative health records resolved. The relationship between disease statistics and environmental factors such as lifestyle, diet, as well as contaminants in the environment will have to be addressed. Finally, state of the environment reporting by governments is growing and demands are increasing to include human health concerns as an integral part of this activity.*

These questions are germane to future information use and development by the Environmental Health Services Branch. In this section, we outline and assess existing information needs for the *intelligence* function of the Branch and describe initiatives in the development of health information that offer new opportunities and emerging directions for the future. But first, we describe a critical information development context within Alberta Health.

The Health Information Processing Strategy of Alberta Health (HIPS)

In section 2.2 we described a functional model comprising seven major components that describes the work of Alberta Health in managing the provincial health care system. The model is an output of a significant system development initiative under the Information Technology Division of Alberta Health, known as the *Health Information Processing Strategy - HIPS*. Specifically, the seven functions are:

1. *Assess Health Status*
2. *Set Health Goals*
3. *Formulate Strategic Directions and Delivery Options*
4. *Provide Health Services*
5. *Communicate with Stakeholders*
6. *Manage Resources*
7. *Evaluate Health System.*

The functional model reflects a multi-stakeholder perspective formulated by a user based working group of representatives of Alberta Health Divisions. The model extends functions to the health care system, beyond a limited Departmental view. Its main purpose lies in establishing a foundation for determining what information will be required to support decision makers as they carry out the seven functions.

Consequently, the HIPS Implementation Plan arising out of the strategy becomes the cornerstone for all information system development at Alberta Health. In view of the role of Alberta Health in managing the health care system, particularly in relation to the boards and agencies it funds, HIPS has significant implications for information system development at the local health units as well.

EXHIBIT 32

Program Goals of Environmental Health Branch, Alberta Health

In its 1990 Role Statement, the Environmental Health Services Branch identified a number of program and project goals. Many make specific reference to providing information or refer to activities dependent on the availability of information. The Branch's stated goals, with requirements for information identified in italics, are:

- *to provide consultative support and expertise* on environmental health matters to the Minister, to senior management staff and to other organizational units of Alberta Health as required;
- *to respond to requests* for action and correspondence in a timely and complete manner;
- *to assist local boards of health* (health units) in program delivery *by providing information*, support, guidance and direction as required;
- *to promote the development of knowledge and expertise* in responding to environmental health concerns; to indicate priorities for research and studies;
- *to develop and update guidelines and standards* of practice for the use of health units, institutions and agencies and *to produce and publish information* on issues of concern to the general public;
- *to* continually *review and update* the provisions of the Public Health Act and the various *regulations* dealing with environmental health;
- *to review the resource requirements* for the operation of environmental health programs in the field and provide input into the budgetary process;
- *to* serve on committees and *ensure liaison* with provincial and federal departments and agencies including, but not limited to: Alberta Environment, Alberta Occupational Health and Safety, Alberta Public Safety Services, Alberta Municipal Affairs, Alberta Agriculture, Health and Welfare Canada, Environment Canada, and so forth.

Source: Alberta Health, Mission Statement, *Alberta Environmental Health Services Role Statement*, 1990

4.1.2 Information Functions in the Environmental Health Services Branch

Current Intelligence Functions of the Branch

The current program goals of the Environmental Health Services Branch, presented in Exhibit 32, may be restated to reflect intelligence functions of the Branch. The Branch is to gather, process, and transmit:

- *Strategic Intelligence* to the Minister and senior corporate level of Alberta Health regarding the administration of legislation and regulations, policy development and advocacy, and advice on threats to system and corporate integrity;
- *Field Intelligence* for Operation regarding program delivery by local boards of health and any centrally delivered programs;
- *Management Intelligence* for the Branch in guiding field operations, planning and control; and
- *Intersectoral Intelligence* for consulting and liaising with other department branches, other provincial government departments, other governments, non-government organizations, and the public.

Concurrently with the statement of program goals, and relevant to our statement of these intelligence functions, the Branch has also identified the following specific project goal for 1990:

- *to support and expedite the development of information systems and data collection in support of environmental health programs.*

Information Supporting the Strategic Intelligence Function

Branch staff respond almost daily to *ad hoc* "action requests" from the Minister and the senior corporate officials of Alberta Health, the top management level, drawing on limited internal resources and expertise, and when necessary, external resources and expertise. The information provided by the Branch can be considered strategic, given the source of the "action requests" and its users. As noted previously, the Branch receives about 20% of its Division's total.

4.1.2 Information Functions in the Environmental Health Services Branch continued...

Routine information provided to the top management level is limited largely to operational and budgeting information. Applications for waste management sites constitute the only program specific information required by regulation to be reported to the Minister. In view of the volatile nature of public concerns with these sites, this information assumes a strategic character. Apart from contributing to the Annual Report of Alberta Health, there is no *regular reporting* by the Branch on system level status or performance, for instance, annual reporting on the state of health and the environment.

Current limitations affecting the quality, quantity, and timeliness of information for the Branch's *Strategic Intelligence* function include:

- inadequate intersectoral coordination and communication;
- limited communication and coordination between branches within Alberta Health;
- lack of baseline information on health status; and
- inadequate information systems for surveillance and management;

Information Supporting the Field Intelligence Function

Health units are the operational partner of Alberta Health, and represent the largest area of responsibility of the Environmental Health Services Branch. Health units submit an annual operating budget to Alberta Health (capital equipment is funded out of operating funds). When approved, the budget incorporates any overall health grant increases, increased funding for existing programs, and funding for new programs. Apart from general grant increases, health units are funded on a program basis, rather than a global basis. To the extent that activity is monitored, information for management review is provided through quarterly financial statements and audited annual statements.

Environmental health program activity from the field is reported through four information systems:

- *Environmental Health Information System - Food Subsystem (EHIS)*, a computerized tracking system examining the relationships between inspection and compliance with food standards and food bacteriology. This system, currently used by eleven health units, is not yet designed to aggregate health unit data and provide a provincial summary.

- *Food Sanitation Education System (FSES)*, a record of individuals successfully completing a food handling course;

4.1.2 Information Functions in the Environmental Health Services Branch continued...

- *Waste Management Information System (WMIS)*, currently being tested by three health units, is a program that will allow the Branch to assess accurately hazards associated with waste management systems as well as predict the life expectancy of these facilities;

- *Laboratory Data Information System (LDIS)*, a record of food and water microbiology laboratory of samples submitted by the local health units to Alberta Agriculture's Food Laboratory (food) and the Provincial Laboratory of Health (water);

There also is a conceptual proposal from the Branch for developing a *Swimming Pool Information System (SPIS)*, a project examining the use of swimming pool bacteriological reports as an early warning system to indicate operational problems at swimming pools. The database now is examined manually by the health units.

The Branch has access to the Laboratory Centre for Disease Control and the Bureau of Chemical Hazards bulletin board systems operated by Health and Welfare Canada, and to Compuserve, an international bulletin board accessing many databases including chemical hazards and toxicology systems.

Of the four functioning information systems, three were developed within the Branch on an *ad hoc* basis. Only one system, the *EHIS Food Subsystem* was approved by the EDP Subcommittee of the Meeting of Directors and developed through the formal systems planning and development process of Alberta Health.

An important, recent joint initiative of the local health units, the Public Health Division, and the Information Technology Divisions of Alberta Health, is the development of an Information Technology Strategic Plan (ITSP). The ITSP, proposed at the time of this report for adoption by the health units, offers a framework for developing their required information systems. The HIPS and ITPS models were validated in October 1990. Originally conceived of in slightly different terms, ITPS is now viewed as a subset of HIPS although it will be "owned" by the health units.

4.1.2 Information Functions in the Environmental Health Services Branch continued...

ITPS reflects the three business areas of health units using them as a basis for future information systems development: health status, program tracking, and service delivery. *Health status* information would assist local health units in determining health impacts on people in relation to place. The intent is to develop an environmental/epidemiological database. *Program tracking/service delivery* information will include putting in place program standards for monitoring, that is, tracking service delivery, thereby contributing to system level coherence and responsiveness to needs. Environmental health, in relation to ITPS, is viewed as a "bundle" of programs - not a single program. It is likely to consist of a food program, a waste management program, and so on.[2]

ITPS will affect the Branch's information needs for its *Field Intelligence* and *Management Intelligence* function.

Current limitations affecting information for the *Field Intelligence* function, as identified in the ITSP and during our Edmonton and Calgary Workshops include:

- insufficient communication between public health units, and between health units and the Environmental Health Services Branch of Alberta Health;
- lack of information on the health status of communities;
- lack of data/information for evaluation of programs;
- lack of standardization in reporting and budgeting between health units limits comparisons;
- inadequate knowledge of and access to information and technical resources within the department and other sectors; and
- lack of information directed to continuing education of public health inspectors.

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[2] Mr. T. Hodge, Director, Program Support Branch, Public Health Division, December 1990. Mr. Hodge is the Public Health Divisions contact on both the ITSP and HIPS initiatives.

4.1.2 Information Functions in the Environmental Health Services Branch continued...

Information Supporting the Management Intelligence Function

Information for the *Management Intelligence* function of the Branch is confined to limited program activity data, and budget information of the health units and the Branch. There are no requirements for measuring the relationship between resource inputs and workload outputs based on standard productivity measures, or the more important relationship between resource inputs and outcomes or results. The larger problem is that the information needs to support a *Management Intelligence* function must be defined on the basis of a theoretical model that defines the domain of Branch functions and links environmental factors with their impact on human health, for example, a model based on concepts previously described in Chapters 2 and 3. The theoretical model must be validated in the Public Health Division, internalized in the Branch, used to rationalize program delivery, and used to help determine information required for the management function. Progress to this end has been limited.

Resources within the Environmental Health Services Branch for helping to articulate from a user's standpoint, the information needs and systems to support the Branch's *Management Intelligence* function are inadequate, although significant assistance to this end comes from the Director of the Program Support Branch. There is one wage position in the Environmental Health Service Branch for assisting with the articulation of its information needs, and for providing certain processing functions - production of reports, the Branch newsletter, and so on. With the assistance of the individual in this wage position, the Branch recently developed a preliminary Environmental Health Services Information Plan (EHSIP). This plan identifies the need for a mission statement relative to information objectives, and specifies certain technical requirements.

Current limitations and obstacles to be overcome in developing the *Management Intelligence* function for environmental health include:

- *ad hoc*, in-Branch development of its own systems and the preliminary EHSIP. These now stand outside of HIPS and the ITSP, and therefore their perceived credibility is affected. Without the link to HIPS, these systems and initiatives serve to isolate the Branch from the "health systems world" and potential strategic allies within Alberta Health;

- lack of institutionalized arrangements for coordinating information on an electronic basis *within* Alberta Health (although this is mitigated by extensive manual coordination - HIPS is also a first step in addressing this issue);

4.1.2 Information Functions in the Environmental Health Services Branch continued...

- lack of institutionalized arrangements for coordinating information with other provincial departments;
- insufficient time, direction and internal resources within the Branch to help articulate as a user, its own information systems needs;
- no sustained history of effective advocacy for the Environmental Health Services Branch at the top management level of Alberta Health, or any departments previously home for this Branch;
- inadequate linkages between program funding to the local health units and accountability for performance (although pending initiatives by Alberta Health in its Accountability Strategy will help in this area); and
- irregular processing and analysis of data reported by health units, resulting in poor information for effectively managing resources by both the local health units and the Public Health Division.

Information Supporting the Intersectoral Intelligence Function

There is a great deal of health and environmental information currently collected by Alberta Health, other provincial and federal departments, other governments, and other agencies and organizations. Volume 2 of this Report, **Supporting Inventories**, presents some of the sources of relevant data and information. Ready access to existing data is a problem, but there is an even more fundamental need to define precisely the type of data needed to support the *Intersectoral Intelligence* function of the Branch. For planning, monitoring, and evaluating this and all the *intelligence* functions of the Branch, as well as the full complement of environmental health services of the Public Health Division, the following are necessary:

- further planning and research to define precise information needs;
- adequate access to existing data and information of known value (epidemiological and toxicological data);
- effective coordination and sharing of information between all the stakeholders;

4.1.2 Information Functions in the Environmental Health Services Branch continued...

- identification of a group or organizational unit to take responsibility for pulling together required information; and

- an examination of the whole field of environmental health issues to focus information planning and research efforts.

In summary, while Branch initiatives leading to the EHIS - Food Subsystem, the Waste Management Information System, and others represent an important and first step, the Branch is only at the beginning of necessary information development, and use of such information to support program delivery and management. The time is opportune to embark on such efforts but they must be conducted within the context of HIPS and ITPS, and with the support of the Alberta Health entity responsible for overseeing such efforts, the Information Technology Division.

4.1.3 Opportunities and Models: Other Initiatives in Health Information

While HIPS and ITPS are at a leading stage of development and will drive information system development in environmental health for Alberta Health and the health units, other valuable initiatives exist that may provide ideas and new resources.

Intersectoral Coordination at the Federal/Provincial Level

The formation of the National Health Information Council (NHIC) represents an important initiative for developing health information systems. The mandate of NHIC was approved by the Deputy Ministers of Health and the Chief Statistician of Canada in December 1988, acting on the advice of the Advisory Committee on Institutional and Medical Services (ACIMS) and its Sub-committee on Health Information. This mandate includes:

- developing and maintaining a national consensus on health information systems,

- considering requirements, responsibilities, priorities, and plans for the collection, processing, and distribution of national/provincial/territorial health information; and

- ensuring the availability of accurate, relevant, comparable, and timely health information.

4.1.3 Opportunities and Models: Other Initiatives in Health Information continued...

The preliminary mission statement of the NHIC[3] is:

> *Through better health information, the National Health Information Council will promote better health for Canadians, support healthy public policy and the effective use of the nation's health resources.*
>
> *In pursuit of these aims, it shall:*
>
> - *determine requirements for health information;*
> - *set priorities for the development, maintenance and production of health information;*
> - *build a consensus amongst stakeholders on requirements and priorities;*
> - *provide direction and advice to all stakeholders to meet present and future needs; and*
> - *encourage ready availability and distribution of relevant health information.*

The Council has identified seven functions inherent to its mandate:

- identifying major health issues and associated information needs;
- determining priorities for national health information systems;
- defining roles and relationships between NHIC and the major stakeholders or partners;
- establishing program priorities for the Canadian Centre for Health Information (CCHI);
- improving consistency of data;
- evaluating new technology related to health information;
- maintaining and improving communication.

Appropriate standardized health information is needed, among other reasons, for

- detecting and monitoring risks,
- measuring health status,
- measuring the supply and use of resources and services, and
- assessing and evaluating interventions, outcomes, and quality.

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[3] National Health Information Council; 1990.

EXHIBIT 33

Canadian Centre for Health Information Health Indicators

Health Determinants

1. Population
2. Elderly Population
3. Total Fertility Rate
4. Age-Specific Fertility Rate
5. Live births
6. Teenage Abortions and Births
7. Smokers
8. Average Number of Cigarettes Smoked per Day
9. Drinkers
10. Average Number of Drinks per Week
11. Persons with High Blood Pressure
12. Elderly Population and Income
13. Elderly Population and Low Income Cutoffs
14. Time-loss Injuries

Health Status

15. Life Expectancy
16. Potential Years of Life Lost
17. Age-standardized Mortality Rate
18. Infant Mortality Rate
19. Perinatal Mortality Rate
20. Suicides
21. Hospital Separations
22. Ambulatory Care
23. Disability
24. Disability Due to Motor Vehicle Accidents
25. Motor Vehicle Accident Morbidity
26. Sexually Transmitted Diseases

Health Resources

27. Per Capita Health Expenditures by Sector
28. Per Capita Health Expenditures by Category of Service
29. Health Expenditures as a Percent of GDP by Sector
30. Health Expenditures as a Percent of GDP by Category
31. Number of Health Professionals
32. University Students in Health Care Disciplines
33. University Graduates in Health Care Disciplines
34. College Students and Graduates in Health Care Disciplines
35. Health Care Institution Beds

Health Resource Utilization

36. Health Care Institution Bed Occupancy Rate
37. Patient-days by Type of Care
38. Patient-days by Age and Sex
39. Separations by Type of Health Care Institution
40. Average Length of Stay in Hospitals

Source: Canadian Centre for Health Information; 1990.

4.1.3 Opportunities and Models: Other Initiatives in Health Information continued...

Among its activities and projects, in the past two years the NHIC has sponsored two national symposia and initiated the development of its own strategic plan. Through the Canadian Centre for Health Information (CCHI), NHIC has published 40 key health indicators. These 40 indicators are presented in Exhibit 33. Another initiative of the NHIC is the Community Health Information Project (CHIP), which is identifying *sentinel indicators*, information that communities need for measuring the health status of their residents as well as risks to the health of their community. Still another project is the compilation of a preliminary, high-level list of systems and data bases by Statistics Canada and Health and Welfare Canada. This project will eventually include all major national and provincial data bases.

The NHIC and the CCHI could serve as a useful source of ideas for the development of environmental health information systems in Alberta. The present Chairman of the NHIC is the Assistant Deputy Minister of the Information Technology Division, Alberta Health. This offers special opportunities for the Public Health Division and the Environmental Health Services Branch in its quest to develop partnerships that strengthen the provincial core to permit it to provide expert support and leadership to the field and Alberta Health in environmental health.

Health Cities Indicators

The "Healthy Cities Project" of the European Region of the World Health Organization, developed a set of healthy cities indicators. Displayed in Exhibit 34, these indicators reflect a strong health promotion perspective important to environmental health (also noted in section 3.3.3, p 62).

A Chemical Database Developed Through Intersectoral Cooperation

The Canadian Centre for Occupational Health and Safety provides comprehensive information on the nature, risk, and effect of over 600 chemicals. The Centre's inquiry service, CHEMINFO, includes such information as the physical state of the chemical, its solubility in water, its flammability, how to clean a chemical spill and, increasingly, first aid measures. Information is geared to employees, employers, emergency response personnel, and medical officers of health. This information, available on CD-ROM disks, could be readily accessed by both the Alberta Environmental Health as well as individual Health Units using their existing PCs.

EXHIBIT 34

Healthy Cities Indicators

1. Percent of homeless families
2. Percent of substandard dwellings
3. Percent of unemployment
4. Percent of poverty
5. Number of days per year NO/SO_2 levels exceed WHO guidelines
6. Annoyance index, or level of satisfaction with cleanliness, noise, odours
7. Percent of seniors within 10 minutes walk of a park/public open space
8. Percent of people reporting "great difficulty" in physical accessibility of local food shopping
9. Percent of people reporting "often" or "always" lonely
10. Violent crime rate
11. Percent of people who work reporting "fairly or "very" satisfied with their work
12. Percent of people who report they have "fairly great" or "very great" control over the conditions that influence their health and the health of their family (if they have one)
13. Percent of people who are daily cigarette smokers
14. Percent of people who report a "fairly high" or "very high" level of self esteem
15. Percent of traffic accidents involving alcohol
16. Percent of people who report active self-care activity
17. Percent of locations where smoking is banned/controlled
18. Existence of an interdepartmental "Healthy City" strategy group
19. Mayor and/or Council have made public commitment to a Healthy City strategy project
20. Percent of domestic waste recycled
21. Percent of people reporting involvement in health, social justice or environmental group activity
22. Percent of people reporting "fairly good" or "very good" health
23. Days of reported restricted activity (unable to do usual work or daily life activities) per person per year
24. Percent of babies born weighing less than 2500 grams
25. Percent of 7 year olds fully immunized with DPT (diphtheria, tetanus, polio)
26. Rate of salmonella infections reported/1000 people/year
27. Age standardised mortality rate for cardiovascular disease
28. Percent of people reporting they feel safe walking at night in their neighbourhood
29. Percent of people reporting the city is a "fairly good" or "very good" place to live
30. Does the City Council have a policy on accessibility for the physically disabled?
31. Percent reporting they daily experience anxiety, depression, sadness or excessive tiredness
32. Potential years of life lost (after age 1, before age 70) per 1000 residents (standardised)
33. Traffic accident mortality rate (standardised)

Source: Based on European Health Cities List of Indicators, Lisbon; 1986.

4.1.3 Opportunities and Models: Other Initiatives in Health Information continued...

HERMES - An Example of Expert Systems Application to Environmental Health

Alberta Public Safety Services, in conjunction with the Alberta Research Council, has developed an *expert system* to assist in the management of emergencies. The Heuristic Emergency Response Management Expert System (HERMES) uses artificial intelligence, integration of knowledge bases, and scientific and technical databases to provide interactive real-time assistance in the management of threats to human health and safety. HERMES could serve as an example for developing new ideas for applying expert systems to environmental health systems in support of Alberta Health and local health unit needs.

Application of the Risk Assessment and Risk Management

Application of the Risk Assessment and Risk Management model (Exhibit 14, p 44) to program development and rationalization also will guide development of required information systems for environmental health services.

4.2 INTERSECTORAL COOPERATION

The Present Situation

In section 3.5 we concluded that the present framework for intersectoral cooperation is the product over some decades of responding to various governmental and administrative situations (pp 75, 77). This led to the present partial coordination mechanisms, voluntary, often bilateral and unstable relationships and gaps or discontinuities in functioning because of a lack of a systemic approach and supra-departmental oversight.

The issue of dioxin and furan in fish described in the preface to this report is a good example of these problems. Dioxin and furans are on the **Priority Substances List** (Exhibit 20, Section 3.3.2) and now are considered "toxic" under the *Canadian Environmental Protection Act*[4].

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[4] Government of Canada, Environment Canada and Health and Welfare Canada; 1990.

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4.2 INTERSECTORAL COOPERATION continued...

While Alberta Forestry, Land and Wildlife and Alberta Environment were involved in the press release issuing a health advisory on eating fish contaminated with these compounds, as explained in the preface, Alberta Health and the health units were not. We understand voluntary efforts were made by Alberta Forestry, Land and Wildlife to obtain input from Alberta Health, but these were at such a late stage relative to the time of the press release that effective input from the Public Health Division and its Environmental Health Services Branch was impossible to mobilize.

Since the Branch was unable to provide its own input, it also had no time to develop an appropriate response in conjunction with health units in the geographically affected area.

The result was a complicated message to the public, its human health issue spread among provincial and federal departments, and no involvement of the one provincial department, Alberta Health, which some[5] say the public believes has most credibility in the issue. The communication gap occurred, as we asserted above, because of partial coordination, volunteer bilateral relationships among the three provincial departments, relationships historically characterized by intermittent conflict characterized by instability. A close examination of the process for regulating of waste disposal sites, the health sector response in the Highway 831 incident, and other examples demonstrates that the problems found by Mr. Calvin Lee in his 1986 report continue (p 36).

Since the 1970s the environmental health service has been characterized by intermittent conflict, some continuing jurisdictional rivalries, and examples of inadequate liaison between the Environment Health Services Branch and Alberta Agriculture Environment, Occupational Health and Safety, Labour, Municipal Affairs. All of these cannot be attributed to a lack of staffing and resources at Alberta Health. Neither can all be attributed to personality conflicts that sometimes can and do arise between individuals of different organizations. The lack of a systemic approach to environmental health and in the absence of higher level authority to resolve such conflicts in our view, are also factors. It is difficult enough to expect among organizations that "equals will coordinate equals". Without structured, formal mechanisms that are either procedural or involve the continuing actions of an arbiter, voluntary coordinative efforts are fragile in the face of uncertainty and lack of common vision. Because of their fragmentation, they also have little hope of enlisting the sustained and broadly applied support of important allies - industry, communities and the public at large - in what could be a common cause.

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[5] For example, senior officials at Alberta Environment.

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4.2 INTERSECTORAL COOPERATION continued...

Industry Has Abilities, Interest, and Valuable Skills to Offer

Industry could be an important participant in the delivery of environmental health, particulary in view of the skill base and resources available in it. A recent example was the H_2S toxicity study. Little progress was made when it was entirely a government initiative, but as soon as the oil and gas industry got involved, they helped focus the effort, got the initiative moving, and made very substantial financial contributions to the needed research.

In terms of general receptivity to industry involvement in environmental health, there is a high level of public concern and awareness, although no overwhelming pressure for specific action. Senior officials in industry are very aware of their responsibility in this area and are currently willing to ensure the industrial sector does something meaningful to secure or improve its status as a good corporate citizen.

Both parties may change their views, possibly very quickly, particularly if there were a major pollution incident on one hand, or an economic downturn on the other. There is a window of opportunity to take some positive steps in putting a coordinated approach together involving all parties working towards a common goal.

The special collaborative skill of some industry representatives may be useful in tackling some of the complex priority setting problems associated with environmental health. The potential here was illustrated by a joint Alberta Government-Canadian Petroleum Association effort to identify and set priority needs for environmental research. Over 100 areas of needed research were identified and subsequently narrowed down to a priority set of nine.

Links Are Necessary Among Local Governments, Local Health Units and Senior Governments

Delivery of environmental health services takes place in a charged political atmosphere. It needs to be able to accommodate the legitimate roles of the relevant provincial agencies as well as the federal government. In addition, it requires clear and strong links between local governments, local health unit boards and their medical officers of health and public health inspectors, and officials of senior government to ensure the knowledge and experience of local levels can complement and support the technical expertise of senior levels of government. Credibility at the local level is as important to senior government officials as expert technical support is to local government agencies. There needs to be a converging of roles so that all parties are well informed and can contribute to the decision-making process.

The Public Must Be Involved

Regulatory measures to protect and promote human health in the face of hazardous environmental factors need to be exercised in a cooperative fashion involving various government agencies, industry, and the public. A proposed Sustainable Development Coordinating Council, which would operate under the proposed Environmental Protection and Enhancement Legislation, may be one way to achieve the necessary cooperation within government but may need to be broadened to allow participation of the public and industry.

Models of Intersectoral Coordination Exist, But Are They Sufficient?

A current example of coordination within the Alberta Government comes from Alberta Labour. This department has a joint program with Alberta Environment concerning underground storage tanks. A protocol is in place and is working well, which required much effort for both parties to define and put in place.

Under the proposed new competency-based risk management provisions of the Department of Labour's *Uniform General Safety Act*, local health unit boards will be eligible to seek approved agency status that will enable them to regulate directly the health aspects of the building and fire codes. Local boards will first need to meet competency-based tests of their capability.

At the federal level, a coordinating mechanism exists among Environment Canada, Fisheries and Oceans, and Health and Welfare Canada on toxicology issues. Monitoring data are provided to Health and Welfare Canada, which then looks at fish use/consumption patterns, to see if there should be a stream or water body-specific health advisory issued. The system operates routinely and is based on a formal protocol.

Another example is the joint involvement of the Ministers of the Environment and National Health and Welfare, regarding the definition of a Priority Substances List and designation of substances as "toxic" under the *Canadian Environmental Protection Act* (Exhibit 20, p 58).

4.2 INTERSECTORAL COOPERATION continued...

Are models such as these sufficient for ensuring cooperative and coordinated intersectoral efforts? It not, the questions facing Alberta Health, the health units, and the various departments, boards and agencies involved in environmental health matters are challenging.

- Can government organizations involved in environmental health voluntarily develop effective ways to cooperate to meet public concerns and needs?

- If not, will the efforts of coordinating, possibly mediating, organizations like the Environment Council of Alberta be able to help effect cooperation at the levels of policy development, strategic planning or operations?

- If cooperation cannot be achieved through such coordinating possibly mediating organizations, will formal process measures suffice, or will existing imperative authority - for example, the authority of Executive Council - have to be exercised to affect it?

- Will it ultimately be necessary to turn to a super agency of some form, perhaps an intersectoral board or commission with legislated powers to enforce coordinated, coherent environmental health programming?

- In any of these options, how will the good will and involvement of key allies in environmental health - industry and the public - be enlisted?

4.3 SUSTAINABLE DEVELOPMENT

4.3.1 Health, Environment and Sustainable Development

Extending the Health - Environment Link

The health - environment link and its significance is a fundamental theme of this report. This link can be extended to include the economy. In a recent conference theme paper entitled *Sustaining Health: Achieving Health for All in a Secure Environment*, Hancock provided a useful framework for this extension.[6]

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[6] Hancock; 1989.

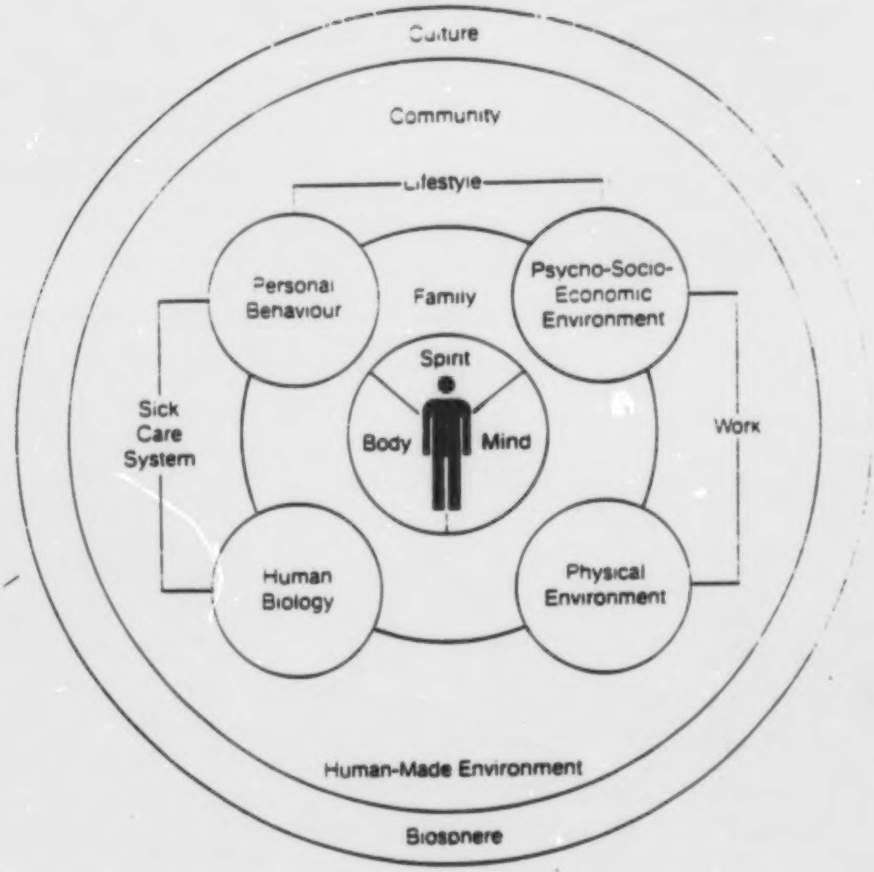
4.3.1 Health, Environment and Sustainable Development continued...

Hancock's definition of health reflects the wider definition adopted by the Minister of Health and this report. This definition incorporates broad social, economic and psychological factors and regards each of us as elements of a complex, interactive social process, explicitly part of the biosphere. Hancock expresses this concept in terms of a human ecosystem, depicted as a Mandala of Health in Exhibit 35. Individual well-being is related to the economic, physical, biological, social and human-made environments. These environments must be considered in the context of the community, culture and the biosphere.

Hancock goes further to suggest that interrelationships among the elements of the Mandala of Health can best be understood through a triad of interconnectedness he depicts as an inverted triangle, as found in Exhibit 36. Economic activity is at the bottom of the triangle, subservient to both health and the environment, but providing the means to achieve security in each. In other terms, this triad is comparable to the three-legged stool of sustainable development - *sustainable health, sustainable environment, sustainable economy.*

EXHIBIT 35

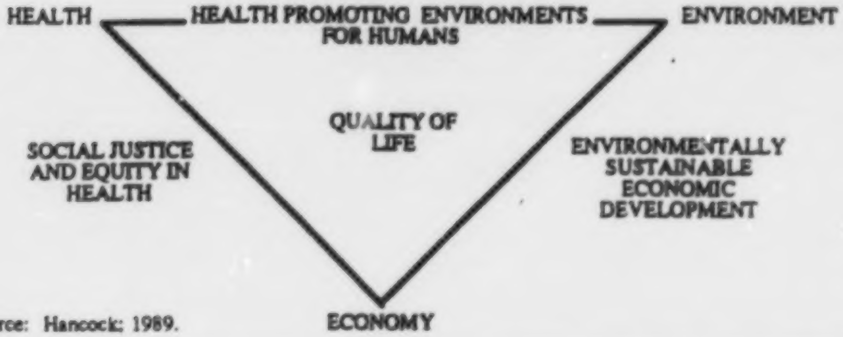
The Mandala of Health
A Model of the Human Ecosystem


Culture
Community
Lifestyle
Personal Behaviour
Family
Psycho-Socio-Economic Environment
Spirit
Body
Mind
Sick Care System
Work
Human Biology
Physical Environment
Human-Made Environment
Biosphere

Source: Hancock; 1989.

EXHIBIT 36

The Linkage of Health, Environment and Economy


HEALTH
HEALTH PROMOTING ENVIRONMENTS FOR HUMANS
ENVIRONMENT
QUALITY OF LIFE
SOCIAL JUSTICE AND EQUITY IN HEALTH
ENVIRONMENTALLY SUSTAINABLE ECONOMIC DEVELOPMENT
ECONOMY

Source: Hancock; 1989.

Bringing the three elements together forms a set of values that combine to produce quality of life, depicted at the centre of these relationships.

Richardson, in his recent publication for the Canadian Environmental Advisory Council (CEAC) entitled "Land Use Planning and Sustainable Development in Canada", summarizes the practical objective towards which we all must strive:

> *What we have to devise is a positive strategy for sustainable development: a strategy, that is, which recognizes economic needs and encourages economic growth within the constraints imposed by the overriding imperative of preserving a lasting, sustainable habitat for humanity.*[7]

It seems we need to return to a view of ourselves and our environment which aboriginal peoples have espoused all along. As the 1977 Declaration of the Nishnawbi-Aski by the Nishnawbi-Aski Nation states it:

> *We are one with nature, with all that the Creator has made around us. We have lived here since time immemorial, at peace with the land, the lakes and the rivers, the animals, the fish, the birds and all of nature. We live today as part of yesterday and tomorrow in the great cycle of life.*[8]

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[7] Richardson; 1989.

[8] *ibid.*

4.3.1 Health, Environment and Sustainable Development continued...

Implications of Extending the Health - Environment Link for Public Health and Alberta Health

When human health is considered in relation to a sound environment and to a sound economy, the calculation of trade-offs between environmental and economic development values becomes more complicated, as additional values are added. As noted in section 2.1 (pp 19, 21), the concepts of both sustainable development and public health recognize that human well-being, in this and future generations, requires that ways be found to preserve ecosystems, species and the resource base (including the "free goods" of air and water), while meeting human needs that depend on economic activities. The critical role of public health is to advocate for human well-being and provide informed advice in decisions that seek to balance environmental preservation and economic development. That role has to be played out for many issues, even while the environment is undergoing changes. Many of these changes are the result of previous decisions, and some of them may require remediation and reversal.

Performing the advocacy and advisory role requires sound information and appropriate channels for delivering that information. Under the best of circumstances, not all needed information is obtainable; for example, current needs for accurate epidemiological information on health effects of chronic, low-level exposures to toxics would require monitoring data whose collection should have started some decades ago, when the range of suspect substances was far narrower. Few health systems have adequate historical data on any but a small number of microbiological problems. Limited resources in Alberta Health create a situation that makes it difficult to capture such relevant data as may exist or to move substantially toward the development of needed data bases. For Alberta Health to play its proper role in decisions about sustainable development in Alberta's dynamic economy, the Department requires both systematic mechanisms for participation and the resources to make that contribution valuable and meaningful.

A tripartite, sustainable development view that incorporates the concept of a human ecosystem element can be introduced into economic and resource development planning processes. The Environmental Impact Assessments process for industrial and resource projects would benefit from a broader focus to address community and health concerns.

4.3.2 Health in Environmental Impact Assessment

Regulatory Instruments with Potential for Introducing Health into Environmental Impact Assessment (EIA)

The requirements for comprehensive EIAs and public reviews under the *Energy Resources Conservation Board Act*, the proposed *Natural Resources Conservation Board Act*, and the proposed *Environmental Protection and Enhancement Legislation* provide a vehicle for incorporating the themes of sustainable development and a human ecosystem. Under the proposed *Environmental Protection and Enhancement Legislation* an EIA ***may*** be required for any project and any project ***may*** be referred to Natural Resources Conservation Board. What is necessary is the explicit incorporation into these new legislative instruments a perspective of the human ecosystem and the concept of health impact assessment.

The new *Canadian Environmental Assessment Act* demonstrates the Federal approach is consistent with this trend. An "environmental effect" is specifically defined in this legislation to include "effects of such change on health and socio-economic conditions".[9] This legislation also proposes full independence of the process through the creation of a separate Canadian Environmental Assessment Agency. The proposed legislation advocates a mediation approach as a first recourse, requires follow-up or evaluation of actual impacts, recognizes inter-jurisdictional and trans-boundary effects, provides for intervenor funding and requires assessment of the environmental effects of Cabinet decisions.

These proposed statutes not only take specific cognizance of the relationships between health, environment and the economy, but benefit from recent research by the Canadian Environmental Assessment Research Council (CEARC). It is recognized that public anxiety about environmental health risks is increasing and public expectations of government in assessing and managing these effects is very high.

This research, in turn, benefits from a series of four regional workshops on health in environmental impact assessment, held over the last two years under the sponsorship of Canadian Environmental Assessment Research Council, Federal Environmental Assessment Review Office, Environment Canada, Health and Welfare Canada and the Canadian Public Health Association.[10] In addition, the very recent National Conference

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[9] Interviews with Environment Canada Officials, 1990.

[10] The study team participated in the fourth of these workshops.

4.3.2 Health in Environmental Impact Assessment continued...

on Environmental Health Issues, in Toronto, sponsored by the same agencies had Health In EIA as one of its central themes.[11]

The Emerging and Present EIA Scene in Alberta

The proposed *Environmental Protection and Enhancement Legislation* is not clear on criteria for deciding what types of proposals should be subject to an EIA. Neither does the proposed legislation specifically include health considerations in the term "adverse effects", although, presumably, this could be done through regulations to the proposed *Act* where the term "adverse effect" is to be defined.

Several additional points are relevant. A "local authority" in the proposed legislation essentially means the local municipal government. For cities this might conceivably include a local health unit board, but as defined, "local authority" seems to exclude a rural health unit board. The definition is important, since regulatory responsibility under the proposed *Act* can be delegated to a "local authority".

The bulk of the provisions of the proposed Act refers to the, as yet undefined, "adverse effects" though the term "harmful effects" is also widely used. There are also many direct references to danger to, harmful effects to, or protection of, human life and health (s104, 105, 111, 113, 114, 115, 139, 140, 143, 157, 159 and 160).

Most of the provisions give sweeping powers, in both routine and emergency matters, to "inspectors", "investigators" or "the Director". In view of the delegation to local authorities noted earlier, it is unclear whether these officials will be health professionals, or have any capability to judge real or potential effects on human life and health. These provisions beg the large and difficult question of how the public health system can be effectively involved in the administration of this proposed *Act*, and further, how the provisions of this proposed *Act* will relate to the Public Health Act and its present paramountcy clause.

The Energy Resources Conservation Board (ERCB) has a mandate broad enough to consider deleterious health impacts of environmental factors as a cost in judging the benefits and costs of a proposal in the "public interest". The proposed Natural Resources Conservation Board will have a similar mandate. Due to experiences with the Lodgepole blow-out and because human health concerns are often raised during ERCB processes (sour gas and H_2S emission), the ERCB and Alberta Environment have become very aware of the increasing need for health impact assessments. They have expressed support for initiatives to degine better the criteria and processes for such assessments. The ERCB expressed considerable interest to our study team in strengthening the capability in the Public Health System to advise the ERCB on the human health effects of energy industry activity.

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[11] Also attended by the study team.

Health Issues In Present EIAs

Issues most frequently addressed in current health impact assessments of EIAs relate to worker health and to emergency response capability in accident scenarios. As well, impact assessments often comment on the need for health care practitioners and facilities to serve larger populations resulting from development. The level of sophistication of these assessments is not very high, and largely reflects a narrow definition of health confined to physical illness. It is likely that the wider non-physical elements of health, at best considered in some assessments as indirect effects of environmental change, are more prevalent than direct physical effects.[12] Consultations with a wide range of stakeholders during this study confirm that there appears to be growing political support for inclusion of comprehensive public health or environmental health assessment in the EIA process.

The Complexity of Health Impact Assessments

The assessment of environmental health effects is complicated because the same effects can be caused by several factors. Health effects are subject to individual biological variability and sensitivity and can increase or decrease in severity in relation to other factors such as nutrition, smoking and alcohol intake. These considerations complicate any search for cause-and-effect relationships. The Risk Assessment Risk Management Model of section 3.2 (Exhibit 14, p 44) is of particular value in carrying out such studies. The "Weight-of-Evidence" method forms part of the model.

Psychological or psychosocial health effects need to be considered in addition to physiological effects. Not only do many believe that the social well-being and economic interests of people must be factored into the process, but many also believe that stress related to critical incidents and the fear of toxic chemicals also should be considered. However, there is a very limited literature base and no "accepted indicators" for the assessment of psychosocial impacts.

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[12] Interviews with Federal Environmental Assessment Review Office officials, 1990.

4.3.2 **Health in Environmental Impact Assessment** continued...

Demand is increasing for baseline studies to measure future changes in the health status of communities. Not only can such studies be very costly, but their value is very much in doubt. Baseline health studies could become useful for continued monitoring of specific and well recognized effects such as those associated with high exposures to a known contaminant. From an information standpoint, initiatives on health indicators (Exhibits 33, 34, pp 106 and 108 respectively) of the National Health Information Council and the Centre for Health Information, will contribute to developments in this area. At the levels of contamination currently permitted for most chemicals, extremely large populations and long time periods will likely be needed to detect health effects in baseline studies.

In responding to these needs and challenges we may not only have to view environmental health issues differently, but to consider new approaches in planning and decision-making. The latest writing and thinking calls for the development of community-based "State of the Environment" reporting for incorporating some of the more subjective health-related variables. The treatment of environmental health as a holistic concept would lend itself to *cumulative effects* monitoring and assessment. In the longer term, a concerted effort at planning and assembling data and information on health effects would help in dealing with extended, multiple-source, low-dose exposures and in defining their role as important causal conditions. This cumulative approach also would appear to lend itself to comprehensive planning processes, such as integrated resource/land-use planning.

Needs and Opportunities

Technical resources for responding to such complex issues are required. Alberta Environment takes the position that Alberta Health should continue to develop and expand its mandate for environmental health services. Alberta Environment does not have the appropriate health expertise. Rather than dealing with health concerns directly, Alberta Environment would prefer to cooperate, not complete, with Alberta Health in exercising this mandate.

The ERCB would like to see the two lead departments, Alberta Health and Alberta Environment, with input from other interests, set clear standards that the ERCB would enforce. For this to be realized there would need to be appropriate organizational capability and resources developed within Alberta Health to respond to specific problems as they arise or are referred from other agencies. The Environmental Health Services Branch of Alberta Health would have to be ready, willing and able to provide advice and assistance to the various regulatory agencies. An example offered to us is that if the ERCB is considering a transmission line proposal, that agency would like to be able to invite an expert within the Environmental Health Services Branch to sit on the panel and provide advice on health impacts of electromagnetic fields.

4.3.2 Health in Environmental Impact Assessment continued...

It will become increasingly important for government to both develop and acquire highly credible capability in environmental health impacts. Health issues in EIAs are frequently presented in a highly charged emotional debate. Credibility is particularly important but specialized expertise often exists only within government. If specialized expertise cannot be brought to testify, the EIA process may be perceived as having been subverted. Public confidence in government thus would be seriously damaged.

An early awareness of sensitivity to environmental health, not only worker health, by industry would be advantageous. here is recognition among government environmental managers that industry participation in the development of regulations and coordination mechanisms is extremely beneficial. The example most often given involves the oil and gas industry where members of the Canadian Petroleum Association and the Independent Petroleum Association of Canada have come a long way in becoming self-regulating in environmental matters and are clearly ahead of other industries, such as the forest and mining industries, in terms of environmental responsibility. Ideally self-regulatory measures should include environmental health features.

A future trend in the EIA field is increasing litigation over departures from required regulatory procedures. There is a need to develop appropriate guidelines and criteria for regulatory processes and to ensure their implementation through comprehensive internal auditing. This need extends to the regulatory process followed by the authorities responsible for health protection.

It has also been suggested that it is important to look at including environmental health impact assessment requirements in all major planning processes, including regional land use planning. In this way, the provincial planning system could move in the direction of anticipation and prevention. If municipalities are to become involved in the assessment of environmental health implications of developments, as s2.0 of *The Planning Act* suggests, they also will need access to the relevant expertise and capability to judge these effects.

Present Limitations in Health Sector Abilities to Respond

Alberta Health and the local health units are not geared up to respond to the requirements of EIAs processes and the public involvement they entail. There is one environmental engineer in the Environmental Health Services Branch who reviews EIA studies forwarded for comment by Alberta Environment. These, and other demands on this position noted previously are such, that there is no capacity left to deal with increased activity on the horizon from health in EIAs. More importantly, there is no time nor direction to think through policy matters in this complex area.

4.3.2 Health in Environmental Impact Assessment continued...

For the health units, resources to respond are also unavailable yet their presence as members of local communities potentially or directly affected by development, makes them a local focus for credible information and even advocacy.

The Role of Health Agencies and Officials in EIAs

Finally, bringing a health perspective to EIAs also raises questions about who should participate in decision making and who should participate in the process. For example, should there be a specific requirement for the ERCB and NRCB to bring health perspective to their work? Should the local health units be permitted to make interventions at EIA hearings? What should the role of Alberta Health be in EIA? What implications follow for the relationship between Alberta Health and the local health units?

A means of resolving some of these questions would be to define more clearly the role of the health system as that of an advocate for human health at all levels including the community level. This would tend to take precedence over health authority involvement in decision making. The objective would be to incorporate expert advice on human health into the decision making process.

4.4 STANDARDIZATION AND LOCAL AUTONOMY

Issues

The present model of delivery of public health services, based on autonomous local boards, has been in existence in Alberta since 1907 (pp 28, 29). Many hold the view that the successes of the present public health system in Alberta built up since its inception are attributable to the responsiveness and flexibility of local delivery by autonomous boards.

Local boards can deal with regulatory and permitting matters on a face-to-face basis. They have certain waiver powers that enable them to respond to local realities (Exhibit 27, p 78). Some argue that too much local autonomy leads to too much variability in how regulations and policies are interpreted. This can generate inequities among regulated agencies and facilities within the local health unit boundaries, and in comparison with those in other health units. Despite such actual or potential inequities the autonomous nature of local boards is regarded as a strength of the system by local authorities. They would be uneasy about intrusions by the provincial level into local health unit jurisdiction as defined by the Public Health Act.

4.4 STANDARDIZATION AND LOCAL AUTONOMY continued...

Opinions on the importance of more uniform application of regulations and standardization were presented to us during the study. Individuals representing Alberta Health, Occupational Health and Safety, the ERCB, and even some medical officers of health and other health unit officials argued that too great an attachment to the idea of local autonomy can conflict with the need to ensure effective protection of human health, or result in inappropriate regulatory action. There are many who believe that the introduction of common standards and strengthened legislation could be a way to resolve matters and need not conflict with the tradition of autonomous boards of health throughout the province.

Other opinion presented to us, on the other hand, argued that local autonomy as the reason for too much variability in the application of regulations is a "red herring". This view pointed out that standardization problems continue to exist in jurisdictions where there is no local autonomy - Saskatchewan, for example. All that is required - the argument went - is strong coordination and leadership at the core, in our case, at Alberta Health.

A Need to Resolve Differences

Resolution of these differences is necessary, not only to ensure fairness and consistency in regulation, but more importantly to guarantee some minimum level of environmental health protection to all the people of Alberta, especially since some environmental hazards are not contained within local health unit boundaries. Nor are the implications of these differences internal to the province or immune to economic considerations: in a shrinking world, the ability to compete effectively in international trade is a growing necessity. The potential proliferation of *de facto* different local public health standards and their different interpretations could distort the patter of sustainable development in the province and lessen the attractiveness of Alberta and the acceptability of its exports in the global marketplace.

Cooperation and Coordination as a Key

We acknowledge that cooperative measures can lead to the resolution of differences. For example, local health unit often cannot recruit necessary staff because it is too small. It then faces the problem of abdicating its role of protecting public health and incurring the risk of negative health effects. It may face legal actions as a consequence. One solution is to pool the resources and obligations of one health unit with those of another improving performance and ability to recruit staff. By doing so, the small health unit might perceive it would have to give up a little of its autonomy to its partner, but it would regain the ability to fulfill its role of protecting public health.

4.4 STANDARDIZATION AND LOCAL AUTONOMY continued...

We also acknowledge that the coordinated development and use of standards is a way of improving system performance. Updated and shared standards are essential to strengthening local-provincial accountability. This accountability is weak and fragmentary with respect to (1) reporting on local use of provincial resources, and (2) demonstrating that the objectives of public health statutes are being met. The local health units and the Environmental Health Services Branch need to develop standards in partnership, and with the common goal of protecting public health from hazards due to environmental factors.

One consideration for resolving the differences is recognizing the value of partnerships to accomplish common goals. Local health units and the Public Health Division need to strike strategic alliances in a wide range of program areas to better protect public health. Cooperative measures among health units and between health units and the Public Health Division of Alberta Health are key. Such measures are necessary, but we believe they are insufficient. Coordination is also necessary.

Strengthening the Core is a Way to Ensure Better Coordination

We therefore concur with those who argue coordinating efforts by the central core are required. This cannot be accomplished without strengthening the Environmental Health Services Branch by increasing its complement of scientific and technical specialists, its information sharing capability, and its leadership potential. By doing so, we believe the ability of the local health units to deliver services more effectively also will be strengthened -at least because of added expert capabilities at Alberta Health to argue for resources needed by the health units. More importantly, a strengthened core will be able to more effectively advise the Minister, corporate levels of Alberta Health, and the health units themselves on human health impacts of social and physical environments, and on monitoring and adaptive actions required by the system of delivery for environmental health services in the province (the Spherical Model, Exhibit 10, p 20).

4.5 RELATIONS WITH THE PUBLIC

Public Complaints and Involvement in EIAs

The role of the public in environmental health is highly significant for at least three reasons.

- A well-informed public is essential to the pursuit of sound policies for sustainable development and provisions for environmental health; conversely, ill-informed and frightened citizens can impede economic and social development on grounds that are scientifically inaccurate.

4.5 RELATIONS WITH THE PUBLIC continued...

- Individuals and families must be able to take measures to protect their health against environmental hazards, both through hygienic and preventive practices and by contributing in their daily lives to maintaining a safe and sustainable environment (recycling, consumption practices, safe driving and safe occupational behaviour).
- Informed and organized citizens can contribute to planning and action to maintain and improve environmental conditions that contribute to environmental health and sustainable development, thereby promoting as well as protecting health.

Allowing the public to fulfill this role requires that government (1) be capable of providing accurate and timely information that addresses individual and general concerns, and (2) provide support (including environmental and health education) to empower and enable citizens to participate and contribute constructively to environmental health protection and promotion.

In Alberta, now, government capacity to respond to citizen concerns about environmental health is limited. It is also so fragmented among agencies that the required information is often inaccessible or unavailable. There is no "single window" through which citizens can obtain the information they require, and there is also a lack of coherence in the responses that they and the media may obtain. Under these conditions, sources of misinformation easily can become more prevalent than sources of accurate information. This problem needs to be dealt with quickly. Citizen groups concerned with environmental issues have become more numerous and active. In some respects they are more advanced than their counterparts in government. Orderly patterns of communication and interaction between them and government must be established.

With respect to health protection and promotion in relation to environmental conditions, Alberta Health's decentralized system of local public health services represents a valuable opportunity for supplementing media communications by providing on-the-ground support and leadership for citizen action. In some local health units, health promotion activities related to environmental issues already provides some "natural experiments" in realizing this potential.

Increased Public Involvement in EIAs

The ERCB has offered to take an active part in a consultative, co-operative effort to establish environmental health priorities and needs. They have more than one hundred staff members in the field who receive input on environmental health matters all the time. Even more importantly, the ERCB staff has the trust of the Alberta public.

4.5 RELATIONS WITH THE PUBLIC continued...

The new environmental protection and enhancement legislation will allow the Alberta public to become more involved in environmental assessment and management issues, generally, and more specifically, in those issues affecting their physical and mental well-being. The way such issues are addressed can either heighten or allay public concern. The fact that boards of health have a positive public image and high credibility - in comparison to governments generally, and to industrial proponents specifically - provides an opportunity for the public health system to play a very pro-active role and respond convincingly to concerns about possible health effects.

Health programs in future will not have the luxury of ignoring public complaints, even those which present science suggests are not valid in terms of measurable health effects. Two concurrent approaches will have to be used. The first will be to make sure that standards are as safe as practically possible and that they are enforced. The second will be to become pro-active and work with the public to understand better people's concerns, and to communicate effectively information on risk assessment, risk trade-offs, the distribution of risk and benefits, and risk management.

Risk communication and responsiveness to the public must become an ongoing process. To date, communication has typically been in response to specific problems or in relation to a public hearing process. The limited focus and the crisis-like circumstances of past communication have often served to cloud the real issues. A pro-active, ongoing approach would begin to mitigate some of these difficulties.

4.6 RESOURCES

4.6.1 Resources In The Environmental Health Service Branch

Two major opinions emerged in the study team regarding resources. The first was that staff resources at the core, the Environmental Health Services Branch, were deficient in quantity, range of skill-sets and direction. We concurred with the field view that leadership was required from the Branch and that it should be exercised through vision, through a clear statement of philosophy, mission, values and goals. A greater coordinating role is also required for Branch staff in province-wide issues that involve health units. Health units also need more support from the Branch in some of their interactions with other departments and agencies.

To respond to present demands and pressures on the Branch additional resources will be necessary. Required are expert resources such as those derived by Guidotti and Conway (Exhibit 7, p 16): epidemiology/environmental health biology, toxicology, environmental health engineering/monitoring. These demands, as we have noted, come from the field, the Minister and corporate levels of Alberta Health.

4.6.1 Resources In The Environmental Health Service Branch continued...

The development of information requirements, while necessarily through HIPS and under the direction of the Information Technology Division, requires the involvement of the Branch to provide "user" input. The Branch has the special need to monitor and make best use of an extremely wide and complex array of provincial, national and international databases (Volume 2, **Supporting Inventories**). If the Branch is to play an expert and leadership role in environmental health, it must have resources that represent combined skill-sets of environmental health monitoring and surveillance, with information system knowledge. This will enable the Branch to define its needs in a way that optimizes the use of extensive, existing information resources.

Legislative revisions to the many environmental health regulations under the Public Health Act are clearly required and are being demanded by many in the field. Since other legal requirements for review of legislation within Alberta Health limit the availability of legal staff in the Policy and Planning Division, additional legal resources also will be required, at least temporarily. These could be obtained either from within government or externally on contract.

A new role for health in Environmental Impact Assessment is emerging in Alberta and Canada. Among the technical personnel required to deal with the community implications of EIAs, the Branch will need expertise in Hazard Identification and Risk Communication.

Finally, we note that the present small staff group at the Branch could benefit from renewal of their own energies. Short term exchange programs arranged by the Branch with selected organizational partners, particularly the Health Protection Branch of Health and Welfare Canada, would be a valuable way to gain new knowledge and recharge energies.

4.6.2 Resources in the Local Health Units

Pressures on Public Health Inspectors

The study team formed a second major opinion with respect to Environmental Health resources available in the local health units, specifically, the Public Health Inspectors. Pressures on staff at the local level were evident to us, they appeared to be attributable to two reasons: (1) increased numbers of routine inspections over the past five years due to increases in the number of facilities to be inspected; and (2) the need to respond to new requirements involving chemical and physical hazards in the environment. We believe the two reasons are linked. While the second of these reasons, dealing with the new agenda of chemical and physical hazards, definitely justifies new resources, it is not

4.6.2 Resources in the Local Health Units continued...

clear whether this need could be met by retraining and redeploying staff involved in the first area, routine inspections. Some short term relief of present pressures felt by the public health inspectors in many health units appears necessary. How much relief and in what context is less clear.

Process for Determining a Longer Term Answer to Routine Inspections

In our opinion, three things need to be done before a longer term answer can be found. First, the epidemiological basis of inspection programs needs to be re-examined. Second, priorities for inspections need to be developed based on a rational model, for example, the Risk Determination model. Third, new strategies for inspecting also need to be considered. The feasibility of coordinating and monitoring the staff resources of other departments engaged in field level, environment health inspections, and possibly certifying facilities, may be ways to reduce workload pressures on local health unit inspectors. Such strategies, for example, are helping Alberta Labour solve its comparable inspection problems.[13] The result of such considerations may be a decision to reduce the present frequency of routine inspections, permitting redeployment of some of the resources engaged in that activity.

Upgrading Requirements in the Short Term for Public Health Inspectors

To initiate the retraining/upgrading of Public Health Inspectors to meet new health agenda needs, and to introduce a new vision of environmental health, it will be necessary to develop and provide specially designed short courses on risk assessment and risk evaluation, applied concepts in toxicology and epidemiology, health in EIAs and risk communication. Expert resources of partners in other departments and agencies in Alberta and at the federal level could provide assistance.

In addition to technical skills in new areas of environmental health, a better informed and increasingly involved public implies the needs for skills in health education and community organization. The development of working cooperation between Public Health Inspectors and increasing the number of local health promotion staff should contribute to reaching this end.

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[13] Previously noted in section 4.2.

4.6.2 Resources in the Local Health Units continued...

Qualification of Inspectors Regulation

Under the Public Health Act the term "executive officer" includes "medical officer of health" and members of the staff of health units designated by the local board for the purpose of carrying out the Act and its regulations. Regulation 244/85 under the Act (Qualification of Inspectors Regulation) prohibits a local board from employing a person as "inspector" unless the person holds specified certification from the Board of Certification of Public Health Inspectors of the Canadian Institute of Public Health Inspectors (CIPHI), or equivalent, as deemed by the CIPHI. Neither Regulation 244/85 nor the Act define an "inspector". The Act mandates an "executive officer" not an "inspector" to inspect public places for the purpose of determining the presence of a nuisance. The term "inspector" is commonly understood in the environmental health field to be Public Health Inspectors with CIPHI designation.[14]

Vacancies in Medical Officer of Health Positions

Apart from the holding of a medical degree, there are no requirements in Alberta for special training or higher qualifications in public health or community medicine for a medical officer of health.

Six of the twenty-seven health units have vacant medical officer positions; ten have full-time officers; ten have part-time officers; several share officers; and some have more than one medical officer. Few medical officers now in Alberta hold higher qualifications: five medical officers of health have a Fellowship in Community Medicine or an equivalent qualification; five hold a Master of Public Health and the remaining four have no higher qualifications.

A shortage exists, therefore, of medical officers, including those with appropriate higher qualifications. Physicians interested in medical officer roles face a lack of clear career opportunities and appropriate incentives to encourage them to take higher qualifications. The remuneration levels of public health physicians compared with other fields of medical practice is in fact a disincentive. The problem is compounded by our finding that only between 12 and 20 approved residency training positions exist across Canada for physicians aiming to specialize in public or community health.

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[14] This Regulation needs to be reviewed, particularly in the context of the study proposed later in this subsection.

4.6.2 Resources in the Local Health Units continued...

Longer Term Measures for Dealings With the Vacancies and Medical Officer Functions

The appeal of careers for physicians in public health could be enhanced in Alberta by a number of measures: (1) greater support for existing MSc and PhD programs in community health, epidemiology and related disciplines in the Department of Community Health Sciences of the University of Calgary and in the Department of Health Services and Community Medicine of the University of Alberta; (2) the creation of Teaching Health Units; (3) the expansion of accredited Residency programs in Community Medicine such as that presently at the University of Calgary; (3) exploring the potential for collaborative ventures between the University of Calgary and the University of Alberta concerning educational programs leading to higher degrees and the possible further growth of Residency programs in Community Medicine within the Province.

It is not obvious to the study that the medical officer manpower problem will be readily resolved in these traditional ways. Quite apart from the consensus view by the study team that there is a need to reshape and redirect the training of medical officers of health away from the traditional "disease model" towards health promotion, disease prevention and management, at least some team study members are of the view that medical training need not be the only route to fulfilling the functions of medical officers of health. In this regard, a number of states in the US have met comparable needs by hiring local health directors who are qualified by a public health degree at the Master's degree level, but without prior or subsequent requirements for a medical degree; part-time medical consultants are employed to advise on issues and services with clinical aspects.

In North Carolina, for example, a special training program was developed and the performance of its graduates was evaluated with favourable findings.[15]

The feasibility of non-medical training at a graduate level for the medical officer functions should be explored in Alberta. Amendments to the definition of a "medical officer" in the Public Health Act may be required depending on the findings of such a review.

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[15] Kaiser; 1975.

4.6.2 Resources in the Local Health Units continued...

The Longer Term Issue of Training Requirements for Public Health Inspectors

Public health inspection programs present considerable problems both in terms of present and projected manpower shortages. The day to day activities and opportunities for training constitute another set of issues and challenges. Training facilities now exist at the British Columbia Institute of Technology leading to a Diploma and in turn to a Certificate in Public Health Inspection from the Board of Certification of the Canadian Institute of Public Health Inspectors. A degree program in public health inspection is offered by Ryerson Polytechnic Institute in Toronto. Few, if any, aspiring Public Health Inspectors from Alberta seek training at Ryerson because of the additional costs involved. The Canadian Institute of Public Health Inspectors is considering a policy whereby, as of 1995, all Public Health Inspectors will be required to hold a Bachelor's degree. Over 85% of Public Health Inspectors employed in Ontario have a university degree in public health inspection. The British Columbia Institute of Technology, which now has a quota for the training of Inspectors from Alberta, does not grant degrees and therefore would not be able to meet the 1995 expectation.

There is justification, in our view, in response to the increasing requirements for scientific and technical knowledge and the art of communication with the public, to raise the entry requirement of professional Public Health Inspectors to the baccalaureate level as a minimum. The matter of deciding to do so, however, is not the role of government. It is a role to be taken up collectively by health inspectors and the professional body that represents them, the CIPHI. What is not clear to us, however, is whether the best way to carry out the functions of environmental health service delivery is by expanding the skill set of the present Public Health Inspector through a well designed baccalaureate program (incorporating previously noted upgrading topics), or whether a new professional category, in addition to the present Public Health Inspector, will be required in the future.

Examining the Functional Requirements of The Public Health Inspector Role

Initiatives have been taken by staff of the Edmonton Board of Health and Concordia College in Edmonton to provide courses that would lead to a baccalaureate for existing Public Health Inspectors. This initiative is of considerable interest; however we have not seen any persuasive evidence that environmental health service delivery needs can best be met by either redefining the role and scope of practice of Public Health Inspectors, or by increasing their formal professional training and curriculum requirements. A study of this type is required. It should include within its terms of reference a review of the future relevance of programs at (1) the British Columbia Institute of Technology, (2) Ryerson Polytechnical Institute, (3) the Environmental and Occupational Health Programs of the

4.6.2 Resources in the Local Health Units continued...

Department of Health Services Administration and Community Medicine, University of Alberta; and similar programs at (4) the University of Calgary, and (5) Concordia College/Edmonton Board of Health. Input into the study is required from Alberta Advanced Education. If more university level training is required their involvement would be necessary for determining which post-secondary institution should be funded, particularly if there were to be programs in which the study felt Alberta should become self-sufficient in training.[16]

It is important to note than any post-secondary training initiatives presently contemplated in environmental health must be funded out of local resources available to the post-secondary institutions generating such initiatives. If the proposed study recommends major thrusts involving an Alberta university or college - or more than one educational institution - Alberta Advanced Education will need to extend funding priority to environmental health programming. Early awareness of Alberta Health needs and views, and government response to this report will assist Alberta Advanced Education in establishing appropriate priority for this area.

4.7 SYNTHESIS: ENVIRONMENTAL HEALTH IN ALBERTA HEALTH AUTHORITIES

To conclude this chapter we return to the eleven roles of a health authority endorsed by the PAHO, and the seven corporate functions from HIPS presented in section 2.2, (pp 23 -27). While we were not mandated to review the activities of each of the twenty-seven local health units, and therefore could not apply the PAHO roles as criteria to assess their functioning, we can apply these criteria to Alberta Health and the health units jointly, specifically to the Environmental Health Services Branch and the Public Health Inspectors.

With full recognition of the limited resources in the Branch and the pressures to which they must respond, our summary views follow.

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[16] To date, self sufficiency has not appeared to be practicable for training of present Public Health Inspectors given the number of new inspectors required each year.

4.7 SYNTHESIS: ENVIRONMENTAL HEALTH IN ALBERTA HEALTH AUTHORITIES continued...

Performance Relative to Pan American Health Organization Criteria[17]

1. Advocate preventive measures: Considering the activities of the Branch and the local Public Health Inspectors, this function falls short of its potential in two ways (1) the mode and volume of activities and (2) their scope. This is particularly the case when this role is extended to include the Canadian-WHO context of health promotion.[18] An exception to this assessment exists with respect to some communicable diseases and some hit-or-miss local interventions on chemical hazards associated with development proposals.

We understand that at the local level, there are household hazardous waste collection programs in partnership with the Alberta Special Waste Management Corporation, weekly articles in local newspapers on a variety of issues, heart health programs in which restauranteurs are advised about low fat foods. Many Public Health Inspectors lobby about land use planning to avoid future nuisances. The provincial extent of all these efforts needs to be expanded and their mode extended in significant ways to media beyond newspapers. The health units draw support from the other branches in the Public Health Division as well as the Environmental Health Services Branch, although neither staff of the Branch nor the Public Health Inspectors play a prominent role in many of these efforts.

Considering the wider perspective on environmental health in this report, including the specific issue of chemical hazards as well as the inclusion of social in addition to physical environment impacts on health, there is ample scope for further efforts.

2. Improve community capacity: Centralized laboratory support is provided to environmental health activities at the local level. Little is being done to encourage or support community self-help programs (for example, primary care of the environment). Some initiatives are in place, for example, the Tobacco Use Reduction and Healthy Communities programs. Branch staff and Public Health Inspectors are not in a position to take a lead role in these areas, but more could be done to increase their participation and support for such programs. More could be done if greater resources were available and if coordination arrangements were strengthened, both at the Branch and among health unit Public Health Inspectors.

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[17] pp. 23-25

[18] The Ottawa Charter, section 3.2.1.

4.7 SYNTHESIS: ENVIRONMENTAL HEALTH IN ALBERTA HEALTH AUTHORITIES continued...

3. Health impact and risk assessments: Other than with respect to communicable disease surveillance, and that seems not fully rationalized, there appears to be very little capacity to undertake this work within the Branch or by Public Health Inspectors in the health units. This function needs development.

A number of major initiatives, however, are noteworthy even though not all are attributable to health authorities: the significant Southwest Alberta Medical Diagnostic Review, a part of the Acid Deposition Research Program; the guidelines for sour gas well blowouts; the initiatives on indoor air quality at the Branch level; and a few assessments by health units, for example, by the Ft. McMurray Health Unit in relation to ALPAC. These initiatives are also important for future developments relative to role **10**, following.

4. Epidemiological surveillance of environment-related disease: As for role 3.

5. Training personnel: The Branch recently collaborated with the CIPH in a short course on current issues in food microbiology including the question of AIDS in food handlers. This continues the history of sponsoring numerous short courses on a variety of topics, and promoting degree completion programs for inspectors. The Edmonton Board of Health and Concordia College joint initiative toward a baccalaureate for inspectors is noteworthy. The Summer School in Health Promotion by the Edmonton Board of Health also stands as an example of the innovations by a small number of health units. Apart from the latter two, the major efforts and accomplishments of this role focused on biological hazards as mandated by the Grainge Report. Chemical hazards, directions in epidemiology and toxicology, risk determination, risk communication, community issues and EIAs, and the wider scope of impacts of the social and physical environment on health remain as training topics for development.

6. Manage and operate assigned programs: A reasonably good record exists with respect to the operation of traditional problems of biological hazards. While debates continue about the acceptability and meaning of present rates of compliance with regulations for restaurants and landfill sites, the public appears relatively well protected from John Snow's single cause, high dose, microbiological agents. Mandates for addressing problems related to outcomes involving chemical hazards and social factors are very unclear.

4.7 SYNTHESIS: ENVIRONMENTAL HEALTH IN ALBERTA HEALTH AUTHORITIES continued...

7. Emergency response capabilities: Activities related to this function need development and better networking of and with the local health units. Some standing relationships and procedures exist between agencies. The Disaster Services Program of Alberta Health (with plans for peace and war time) maintains two officials in a standing relationship with Alberta Health and Public Safety Services (AHPSS). One is in the Ambulance Services Branch. The other is a waste management consultant in the Hospital Services Division. There are standing relationships for sour gas well blowouts that link AHPSS, Alberta Health, health units and other organizations. Many health units have emergency disaster response plans as a part of municipal emergency/disaster response plans. We understand a model plan exists for health units for disasters.

In practice, problems exist. The "success" of the recent Highway 831 response in one of three affected health districts depended upon a Public Health Inspector acting independently in the absence of standing orders. The Branch did not appear to take any role in this event at all.

8. Development of norms, standards, and legislation: Updating work is lagging behind on various health regulations widely recognized as obsolete and inconsistent. Neither program standards nor outcome standards exist. We are informed that some process and structural standards have been developed, but this appears very limited.

9. Environmental impact assessments: A relatively large number of central desk reviews are conducted, but without a credible array of skills. The one individual attending to this area at the Branch has provided valuable contribution but the resources he represents are not enough. There is a lack of appreciation apparent at the local level about technical problems of conducting impact assessments; there are no orderly arrangements for participation in them.

10. Environmental data assessments: Great amounts of data are available, but is not accessed, reviewed, nor assessed.

11. Cooperation with economic development: There is no systematic provision, and there are limited skills to contribute.

4.7 SYNTHESIS: ENVIRONMENTAL HEALTH IN ALBERTA HEALTH AUTHORITIES continued...

Performance Relative to the Seven HIPS Functions[19]

We note that some health units, for example, the Edmonton Board of Health, have taken important steps in the following areas. While we continue with "health authorities" as our perspective, we recognize the limits of our mandate and our detailed knowledge of health unit performance relative to these functions. Our comments, therefore, are directed mainly to the performance of the Public Health Division and its Environmental Health Services Branch.

All comments are within the context that by developing HIPS and ITPS, Alberta Health and the health units have laid the groundwork for much more than information system development. They have laid the groundwork for bringing greater affectiveness to the organization and delivery of environmental health services in the province.

1. **Assess Health Status**: The process of defining environmental health and its components is at an embryonic stage; this report is a key initiative. Apart from important collaborative involvement at the federal/provincial level by the Public Health Division, and some awareness of health indicators from the "Healthy Cities" project and the Community Health Information Project there is little commitment to the use of specific health status indicators that reflect the impact of social and physical environments in human health. Measuring and analyzing changes in health status remains a future activity.

2. **Set Health Goals:** This report is the beginning of a process to establish environmental health goals and particularly, their articulation in relation to Public Health Division goals. This has important implications for *intra* agency coordination within the Division.

3. **Formulate Strategic Directions and Delivery Options**: Present directions and options for the Branch have responded to the Grainge Report. They do not address a wider definition of environmental health new methods, which include health promotion, and a more comprehensive outcome focus that is necessary today. Further work will be required in this area at all levels. In particular, refinement of strategies will be necessary to ensure effective intersectoral coordination and better Alberta Health-health unit coordination.

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[19] pp. 25-27.

4.7 SYNTHESIS: ENVIRONMENTAL HEALTH IN ALBERTA HEALTH AUTHORITIES continued...

4. Provide Health Services: The outcome orientation and standard setting discussed in this report needs refinement. Based on outcomes and standards, resource requirements can be better determined and their allocation rationalized. Articulated Alberta Health-health unit plans need to be developed. Better support is necessary for the field, and more support must be provided by Alberta Health to the Public Health Division and its Environmental Health Services Branch.

5. Communicate with Stakeholders: Continued and more effective ongoing communication between the Division and the health units, and among the health units is necessary. New roles and policies must be developed for the health units and the Division regarding health in EIA processes, and in the technical area of Risk Communication relative to the public.

Intersectoral attention and good will gained during the strategic planning seminars of this study by Alberta Health need to be further built-up. This will require more effective use of present channels of communication and development of new ones.

6. Manage Resources: This function is weak in environmental health at Alberta Health. Major improvements are necessary in the activity of identifying adequate resources for environmental health. The infrastructure is not well built up. It is characterized by inadequate *inter* and *intra* sectoral coordination; frustration among the small complement of professional staff at the Environmental Health Services Branch and among Public Health Inspectors; chronic vacancies in certain positions (for example, medical officers); and limited skill-sets in required areas of expertise.

Adequate resources at the Branch need to be acquired and effectively distributed in relation to environmental health functions in the Division. Resources in the Branch and the health units need to be adequately maintained and supported with training in areas involving outcomes related to new environmental health agendas: chemical and physical hazards and the wider considerations of human health impacts of social and physical environments.

7. Evaluate Health System: This study is beginning the process of specifying expectations and issues in environmental health, and other evaluation activities required by this function.

4.7 SYNTHESIS: ENVIRONMENTAL HEALTH IN ALBERTA HEALTH AUTHORITIES continued...

Conclusion

The Environmental Health Services Branch and the Public Health Inspectors have fulfilled the directions given them in the Grainge Report of 1977. Events, technology, public expectations and concepts that link our health with the environment have gone beyond the 1977 directions and mandates. Environmental health in Alberta must move into a new era, one that expands its human health agenda to deal with contemporary environmental issues, and incorporates a vision of how environmental health can contribute to our well-being.

5. STRATEGIC OPTIONS

Previous chapters in this report presented the context, conceptual framework, and situational analysis of environmental health services in Alberta. This chapter begins with a capsule of summary of evidence that a problem exists with the way these services are delivered. Strategies for responding to the problem follow. All the strategies are listed at the end of the chapter for convenience.

5.1 THE EVIDENCE FOR TAKING ACTION

Capsule Summary

1. As in John Snow's time our health remains at risk from microbial agents that can cause known outcomes of acute disease and illness. But now we face added hazards from low dose chronic exposures to many factors in the environment whose effect are likely multi-causal and not always known until the harm is done. These exposures are linked to the degradation of the environment, that is, to destabilization of its cycles. The hazards result from global circumstances - for example, thinning of the ozone layer, and from circumstances specific to Alberta - diversification of the provincial economy in petroleum and gas production, petrochemicals, pulp mills, mining, forestry and agriculture.

   Scientific evidence is well established on the harmful effects of many microbial agents and forms the basis for present prevention and protection programs of public health inspection. Scientific evidence exists in many cases and is mounting in others, on the harmful effects of chronic, low dose exposures to various chemical and physical agents. Such scientific evidence is the basis for identifying a list of priority substances, chemicals and groups of chemicals, elements and wastes and designating specific entries on the list as "toxic" under the *Canadian Environmental Protection Act.*

2. Public concern about the environment is personalized - it is about *health effects* of environmental factors on individuals and their families. The evidence for health being the focus of concern comes from public opinion polls; from the high and increasing number of calls and "action requests" faced by Alberta Environment and Alberta Health; and from demands on many health units to investigate and abate conditions that are, or may become injurious or dangerous to health.

5.1 THE EVIDENCE FOR TAKING ACTION continued...

3. Although the province has a wide array of resources for responding to hazards that present risks to human health in the environment, intersectoral cooperation and coordination among governmental organizations responsible for these resources requires strengthening. The provincial system also requires more significant input by Alberta Health. The evidence for this comes from the 1986 report by Mr. Lee, from our own review as documented in this report, and from frank comments about the weakness of the present response of Alberta Health, expressed by senior representatives of government departments at the second of two strategic planning seminars held during this study.

4. In contrast to this scientific evidence, public concern, and intersectoral recognition of coordination problems, there has been an ambivalent attitude to the Environmental Health Services Branch and to Environmental Health programs at the health units. The evidence for this is

   - low priority, in terms of the program's share of total funding, both locally and provincially;

   - the status of present Environmental Health Branch professional resources, which are fewer in 1991 than when it was established in 1977, despite an increase in the amount and scope of work, and despite recommendations in 1986 to increase them;

   - the relative isolation of the Environmental Health Services Branch from the other Branches in the Public Health Division, despite the fact that many of the Division's services are within the contemporary definition of "environmental health";

   - uncertainty within Alberta Health about pursuing a mandate beyond biological hazards, despite ongoing involvement with chemical and physical hazards, both at the Branch and at local health units, through action requests, investigations involving risks to human health from chemical and physical agents, and so on; and

   - inability to attract senior level advocacy for environmental health within the health sector.

Growing recognition of these problems was an important consideration, which led to the commissioning of this study.

5.1 THE EVIDENCE FOR TAKING ACTION continued...

Consensus on Alberta Health Involvement and the Need to Strengthen its Resources

There is consensus among senior officials of government departments, boards and agencies that Alberta Health should take an active part in senior level, intersectoral discussions and decision making on environmental health matters. In essence, there is agreement that Alberta Health should have a "seat at the table". However, as stated bluntly by senior officials at the second strategic planning seminar in our study, Alberta Health must either come up with the resources it needs to play an effective part, or it should get out of the environmental health business. The present allocation to Environmental Health, including health unit operations is $7-8 million, of which $0.5 million is the budget for the Environmental Health Services Branch in its role as provider of expert advice to the field and to Government on human health impacts of environmental factors. At the seminar this was considered by many outside of Alberta Health as insufficient for the required function of the Branch, and in the context of the importance perceived for this role, small compared to the total Alberta Health budget of $3.1 billion.

5.2 STRATEGIES FOR RESPONDING

Structure for the Presentation of Strategies

We believe the evidence presented warrants action by Government. The options following in this chapter outline possible actions for responding to public concerns and improving future delivery of services. Our presentation of strategic options is in two parts. The first part presents an **Essential Option**, the second **Wider Options**.

The **Essential Option** outlines a scenario for the Minister of Health that will enable her to respond to concerns about environmental health, which we see as a growing public issue. This option represents the *up front* cost to Alberta Health to have its desired "seat at the table" of government departments involved with environmental matters, and for the Environmental Health Services Branch to have its "seat at the table" *within* Alberta Health. The strategic options of the second part of this chapter are the **Wider Options**. These options set out a series of approaches to further develop environmental health services in Alberta, and reflect increasing change and hence, increasing departure from present commitments and arrangements.

A list of all strategies is presented at the end of this chapter for convenience.

5.2 STRATEGIES FOR RESPONDING continued...

Strategic Options are a Beginning

Before we outline the options themselves, we wish to draw attention to three matters.

- This study and its options are strategic in nature: we deal with the broad picture, not matters of detail; our options mark the beginning of work toward further conceptualization and implementation; options that follow represent a beginning of further planning efforts.
- Our options target the provincial level and Alberta Health more than the local health units, mainly because our mandate was to focus on the Environmental Health Services Branch, not each of the twenty-seven health units. As will be seen, however, the local health units are very much part of our considerations.
- Our options should not obscure the study team's view that Public Health must remain involved in controlling infectious disease. We are not persuaded by arguments that past environmental sanitation measures have done such a superb job protecting Albertans from serious illnesses and are so well institutionalized among other government departments, boards, agencies, and through our market mechanisms, that Public Health can relax its vigilance in this regard. To do so would be a regressive step for Alberta, a step on the road leading to third world status in health, with its characteristic features of high infant and adult morbidity and mortality.

Finally, we note that this chapter deals with *options*. In Chapter 6, we present our *recommendations*.

5.3 THE ESSENTIAL OPTION

Assumption

The **Essential Option** assumes that present arrangements for delivering environmental health services are essentially appropriate, but that the array of resources valuable to the delivery of environmental health services in the various government departments, boards and agencies is tapped ineffectively by Alberta Health because its own resources are inadequate for it to reach out effectively and make use of them.

5.3 THE ESSENTIAL OPTION continued...

Strategic Objectives for the Minimum Option

This option has five strategic objectives:

- to enable the Minister of Health to respond to a high level of public awareness of and concern with environmental health;
- to strengthen the abilities of the Environmental Health Services Branch of Alberta Health and the local health units so that both partners can better perform their present roles and functions;
- to enable the Environmental Health Services Branch to communicate with and make better use of existing technical resources in other government departments, boards and agencies toward the common goal of protecting and promoting the health of Albertans; and
- to strengthen the developmental and supportive interactions between the local health units and Alberta Health; and
- to establish a health agenda and framework for environmental health in the Public Health Division that enables the Division to better integrate and articulate environmental health services among its branches, and through leadership and coordination, among programs offered by the health units.

Elements at the Ministerial Level

E.1. Government confirms that the role of the Minister of Health is to provide advice to Executive Council on measures required to promote and protect human health in the face of biological, chemical and physical hazards in the environment. Health is understood as a state of complete physical, mental and social well-being not merely the absence of disease and injury.

The Government of Alberta, through Executive Council, has the mandate to make policy decisions that affect the people of Alberta. While members of Executive Council have human health as their common concern, we believe responsibility should be *explicitly* vested in one person for bringing forward expert opinion on promoting and protecting human health from adverse environmental factors and conditions. Many consider the primary candidates for such responsibility are the Minister of Health and the Minister of the Environment.

5.3 THE ESSENTIAL OPTION continued...

Evidence cited in this report indicates the public personalizes environmental issues in terms of their health impacts (pp 39-41). Therefore, referring back to the preface of this report where we presented the issue of dioxin and furan contaminants in fish, the unambiguous answer to the question "Who Speaks for Human Health in Alberta?" in our view, should be: "The Minister of Health". Our answer reflects a commitment to seek out the opinion of the Minister of Health on environmental matters affecting human health, because her opinion will be founded on values, premises, and technical considerations specific to human health. The Minister of the Environment would have a complementary, and a strongly founded set of values, premises, and technical considerations to offer, but the primary perspective would be the environment, not the health of the human species in it.

Our answer does not reflect a choice of exclusive jurisdictional mandate for Alberta Health. It does reflect the acknowledgement by many, for example Alberta Environment, that the public trusts Alberta Health to answer concerns about threats to its health in the environment more credibly than any other department.

That Government may make decisions on a basis other than human health, is quite possible. Our **Essential Option**, however, also calls for the Minister to advise the Government of the implications for human health of intended policy, legislation and development decisions before they are implemented or made. Our intention is that all government departments, boards and agencies seek out this advice from Alberta Health in regard to the potential impact on human health of any of their initiatives. In this regard element E.1 of the **Essential Option** provides a means to implement **Recommendation 19.0 of the Rainbow Report** (Exhibit 12, p 37).

Element E.1. of this option, therefore, establishes Alberta Health as the single window in the Government of Alberta for advice on environmental hazards presenting risks to human health.

E.2. **Future mandates for environmental health are clarified by designating the Minister of Health and Alberta Health in emerging and all subsequent new and amended legislation with responsibility for regulated matters that have possible human health implications. Specifically, the proposed *Environmental Protection and Enhancement Legislation*, the *Natural Resources Conservation Board Act*, and the *Uniform General Safety Act* are reviewed to identify areas of appropriate designation. The matters designated are jointly recommended by Alberta Health and the department sponsoring the new legislation, according to a protocol developed for the purpose and approved by Government.**

5.3 THE ESSENTIAL OPTION continued...

Designating the Minister of Health to be responsible for matters with potential human health implications in relevant areas of new legislation reaffirms the Government's commitment to **Healthy Public Policy** espoused by the Rainbow Report (Exhibit 12, p 37 and p 38). It also establishes a commitment that the health implications of new legislation will be considered in future legislation, a commitment to health in "legislative impact assessment".

Examples exist in several jurisdictions of designating a Minister of Health or her department to be responsible for matters in legislation directed to control of environmental factors. We have noted for example, the Minister of Health and Welfare shares with the Minister of the Environment responsibilities for the control of toxic substances and for setting guidelines and codes of practice to protect human health and environmental quality (pp 57, 58).

Responsibility must be defined clearly. It could vary, for example: (1) requiring consultation of the Minister of Health or of her department on a matter before decisions are made or actions taken; (2) requiring joint involvement in policy, guideline and practice specification; (3) delegating administration of specific portions of the Act in question to the Minister of Health or her department; or other appropriate measures.

By requiring joint recommendations from the department sponsoring the new legislation and Alberta Health, a collaborative review of legislative proposals is mandated. To ensure opportunity for input by Alberta Health and to break possible deadlocks between officials, a protocol for joint development of recommendations will be required, and likely approved by Executive Council.

E.3. **The Minister develops, jointly with her colleagues of Executive Council, a communication strategy for managing the public release of data regarding substances in the environment that are causing a significant real or perceived hazard to human health. The policy involves an interdepartmental mechanism that is time limited, and produces decisions on responsibility for content of the communication.**

The Assistant Deputy Minister of the Public Health Division of Alberta Health could, for example, chair a standing Committee of Assistant Deputy Ministers from Environment, Agriculture, Occupational Health and Safety, Public Safety Services, Forestry Lands and Wildlife, Labour, etc., which would meet at the call of the chair, as determined by Executive Council on the advice of the Minister of Health. The existing Natural Resource Advisory Committee of Assistant Deputy Ministers could be adapted for this purpose.

5.3 THE ESSENTIAL OPTION continued...

The first purpose of the Committee would be to determine, within 48-72 hours before the communication release, jurisdictional mandates and the lead Minister, and therefore lead department for preparing the communication strategy. Following the lead department's formation of interdepartmental expert teams for preparing the communication strategy, each Assistant Deputy Minister on the Committee would instruct his department of specific responsibilities in the strategy development and implementation. The Assistant Deputy Minister of the Public Health Division would inform, in writing, the Assistant Deputy Ministers of the other departments of the *health* advice being offered.

The press release would follow within, say, 24 hours after the Assistant Deputy Minister of Public Health produced the written *health* advice.

This element of the **Essential Option** recognizes the two-edged sword of time-limited communication strategies. Communication may be forced before all facts are in. The concern for completeness, in our view, does not outweigh the right and the need for the public to know what is happening. In jurisdictions where such communication policies exist, for example Ontario and the Government of Canada, despite the risks of responding with incomplete information, and the difficulties caused by time pressures, the policy stands.

Strengthening Ministerial and Alberta Health Commitment to the Public

The following elements enable the Minister of Health and her colleague the Minister of the Environment to respond to public concern and interest in the link between the environment and human health.

E.4. The Minister of Health directs Alberta Health to incorporate the concept of sustainable development into her department's Mission Statement, departmental roles, goals and objectives.

By directing Alberta Health to incorporate the theme of Sustainable Development into its Mission, roles, goals, and objectives, the Minister of Health is giving effect to the fourth principle she has adopted in carrying out her role *the indivisibility of health and the environment* as stated in her Budget address of April 25, 1990 (Exhibit 12, p 37). She is also paralleling the direction given by the General Assembly of the United Nations to the World Health Organization to incorporate sustainable development into its thematic mission "Health for All by The Year 2000".

5.3 THE ESSENTIAL OPTION continued...

Significantly, she is also reaffirming that an issue important to the Minister of the Environment is equally important to her for policy formulation and day-to-day program delivery. We believe partnerships to strengthen the provincial core begin with a partnership of Ministers.

E.5. **The Minister of Health and the Minister of the Environment jointly prepare and publish on behalf of the Government of Alberta an annual report to the people of the Province on the State of Environmental Health in Alberta - the Health of the Environment and the Health of the People, in the face of biological, chemical and physical hazards to human health in the environment. The contents of the report evolve as new ways of documenting and measuring health status and the state of the environment are developed.**

Annual reporting is a visible way to demonstrate to the people of Alberta that Government has recognized a major public issue, and wishes to communicate what it is doing to ensure the theme from the Rainbow Report "Healthy Albertans, living in a healthy Alberta" increasingly becomes a reality. While initial versions of the annual report may be relatively modest in content, as new ways of measuring health status and the state of the environment are developed and staff learn to work with them, the contents may increase in sophistication.

E.6. **The annual State of Environmental Health report and Alberta Health's Mission, roles, goals and objectives, reflect the principles and distinctions of health, the human ecosystem, and sustainable development as expressed in section 2.1, 2.2 and 4.3 of this report.**

By affirming the human ecosystem and sustainable development principles of this report, the Minister of Health acknowledges the wider definition of health, the first principle she referred to in her budget address. Simultaneously, she gives recognition to the interrelationship humans have with all the environmental forces that shape life on the biosphere.

E.7. **The Public Health Division of Alberta Health, and specifically staff in its Environmental Health Program, are mandated to assist the Minister of Health with the preparation of the annual report on the State of Environmental Health, by working jointly with officials from Alberta Environment on a Standing Committee of Alberta Health and Alberta Environment established for this purpose.**

5.3 THE ESSENTIAL OPTION continued...

Giving a mandate to Public Health and its Environmental Health Program to assist in the preparation of the State of Environmental Health Report gives much needed impetus to the Program, and provides an opportunity to establish a special task oriented link between Alberta Health and Alberta Environment.

The Public Health Division

E.8. The Public Health Division adopts the wider definition of health and its determinants, and ensures its role, functions and structure integrate environmental health services throughout the Division. Within this context, the Division adopts the following priority outcomes as the minimum domain for the Program presently under the Environmental Health Services Branch:

- ***Communicable disease* from (a) food-borne organisms, (b) water-borne organisms, (c) air-borne organisms, and (d) faecal-oral route; and the Division makes these outcomes more specific by targeting particular species such as *E. coli 0157* and others.**
- **The small proportion of *cancers* that are induced by excess radiation and chemical contaminants in food, water and air.**
- ***Reproductive outcomes* including infertility and developmental problems, as well as congenital abnormalities, from chemical contaminants in food, water and air.**
- ***Stress outcome* from noise and odour.**
- ***Respiratory and allergy* outcomes from chemical and particular agents.**
- ***Injury* associated with certain acute chemical spills and certain mechanical hazards in residences and public places.**

The wider definition of health is the WHO definition adopted by the Minister (Exhibit 12, p 37). The determinants of health are as presented by Evans and Stoddart (Exhibit 4, p 10), and related to social and physical environments by Schaefer (Exhibit 4, p 8, 9, pp 16 and 17 respectively). Integration in the Division is necessary, given the multi-causal nature of environmental effects. Multi-causal agents imply blurred domains of responsibility for those who deliver, manage and regulate environmental health services. The focus must be on individual and community needs first. Collaborative mechanisms are required to meet these needs, despite overlaps in domains of responsibility.

5.3 THE ESSENTIAL OPTION continued...

E.9. The Environmental Health Services Branch and its staff work collaboratively with technical resources in other government departments, boards and agencies, other branches in the Public Health Division, and other parts of Alberta Health that have mandates and policy concerns relevant to environmental health.

This strategic direction is pointed and self explanatory. The Branch is to be held accountable for the outcome of its efforts to reach out, develop partnerships and work with its partners to promote and protect human health in the face hazards in our social and physical environments. We anticipate other departments, boards and agencies, and the relevant organizational units of Alberta Health will hold their staff accountable for their counterpart efforts as well.

The four most obvious linkages to be established or strengthened within Alberta Health are (1) with Communicable Disease and Epidemiology, which is important if not critical to revision of inspection mandates and methods; (2) with Health Promotion that, in the present evolution of Alberta Health assessment seems to include injury prevention, so that the areas is "Health Promotion and Disease/Injury Prevention", meaning that the link to be strengthened involves both relatively hard and soft (public empowerment) elements; (3) with the present Information Technology Division which lacks operational involvement with health indicators, but has an important lead role in advising Alberta Health on policy and planning matters that affect the development of environmental health information; and (4) with the Mental Health Division to better incorporate issues of mental well-being.

Related to Health Promotion/Injury Prevention are the potential resources of the Injury Awareness and Prevention Centre at the University of Alberta Hospitals. Of course, intra-departmental linkages may change depending on the organizational structures of the day. Some of the present ones, even within the Public Health Division, will likely need to be reviewed in the context of decisions made regarding the acceptance of various elements of options in this report.

E.10. The Public Health Division, through the leadership of the Environmental Health Services Branch, and in collaboration with the local health units and its other Branches, develops statements of vision and environmental health objectives for consideration by Alberta Health, the Public Health Division and the local health units. The statements reflect and sustainable development expressed in sections 2.1, 2.2 and 4.3 of this report. This effort is to be integrated into the general goal setting process conducted by Alberta Health.

5.3 THE ESSENTIAL OPTION continued...

The lead for environmental health matters in Alberta Health must be given to the Environmental Health Services Branch. A statement of vision and objectives to set directions of leadership is necessary. It must be developed jointly with the health units and other Branches of the Division to assure its wide acceptance. The statement must be developed through the HIPS corporate function model (pp 25-27).

E.11. Expert staff resources representing new skills in epidemiology/environmental health biology, toxicology, and monitoring and surveillance/informatics are added to the Environmental Health Program with roles as designated in this report.

Environmental Health Biology/Epidemiology and Toxicology: The role of the new staff with skills in these areas will be to

- provide expert support to Alberta Health and the local health units;
- liaise with discipline specific counterparts in other departments and within the Public Health Division;
- access resources available elsewhere in support of the Program's mandate;
- assess the epidemiological justification of current inspection mandates and strategies, in order to ensure that resources are being allocated to priority outcomes, including those that may fall outside present mandates;
- lead the Public Health Division's internalization and application of the Risk Determination Model (Exhibit 14, p 44) to rationalize environmental health services programming and resource allocation;
- support the Program's provision of strategic intelligence information to the Minister and senior corporate levels of Alberta Health; and
- assist the Program with other developmental work, including the function of monitoring and surveillance/informatics.

5.3 THE ESSENTIAL OPTION continued...

Monitoring and Surveillance/Informatics: The role of the new staff with skills in this area will be to

- liaise with other government departments and agencies to develop and maintain familiarization with international, national and provincial information resources relevant to environmental health;

- coordinate and contribute Program input as users into HIPS and ITPS under the overall coordination of the Information Technology Division;

- establish and chair an *Environmental Health Information Advisory Group* with representation from the Information Technology Division and other relevant organizational units of Alberta Health, together with representation from other departments including Occupational Health and Safety, Environment, local health units, Alberta Cancer Board, Alberta Research Council, Hospital Medical Records Institute, Congenital Anomalies Reporting System, industry, and so on. The vice chairman should be from outside Alberta Health and the committee should be modeled on the National Health Information Council. The *Advisory Group* would advise the various bodies represented on it.

  The role of the *Advisory Group* should be to (i) encourage opportunities for coordinating, standardizing and sharing data and information among Secretariat members' data bases; (ii) advise the Program and the Public Health Division on how to optimize the use of existing data bases for environmental health programs; (iii) within the context and processes of HIPS and ITPS, advise the Information Technology Division on information system planning and development needs for the Program and the local health units; (iv) explore the feasibility of incorporating environmental variables into relevant provincial databases outside of Alberta Health; (v) maintain awareness, and if appropriate, but always through established Alberta Health protocol, liaise with the National Health Information Council to ensure developments take into account national directions involving environmental health;

- as part of the HIPS and ITPS process, contribute to the development of strategic information requirements for the Program.

5.3 THE ESSENTIAL OPTION continued...

The *Advisory Group* could be a formal Alberta Health committee, chaired by a representative of the Information Technology Division. We expect, however, that departments and agencies from outside Alberta Health may find it acceptable to work at an environmental health "user" level. If the *Advisory Group* were to be chaired by some one from the Information Technology Division there could be a perception that outside agencies and departments were being drawn into an Alberta Health-specific information system development process. The presence of a representative from the Information Technology Division on the *Advisory Group* would provide an alternate way of ensuring appropriate linkages to HIPS and ITPS. Further consultation among proposed participants can point to the best way to deal with the matter.

E.12. Staff resources are added to the Environmental Health Program in order to (1) catch up with the outstanding work of reviewing and updating the Public Health Act and Regulations, and developing standards, and (2) to contribute to ongoing review and assessment of health impacts of legislation, regulations, and policies of Alberta Health, the health units and other departments, boards and agencies.

The development of legislation and regulations must be an open and collaborative effort between the local health units and the Public Health Division, and should involve adequate public input as part of the process. The skill base built up in the Program can be used to contribute, along with other parts of Alberta Health, to ongoing health impact assessments of policies and legislation of various departments.

Legislation and Regulations: Regarding the Public Health Act and its regulations, the role of the new staff is to develop position papers, draft initial ideas for revisions to regulations and amendments to existing legislation. Specific areas for contribution include:

- legislative philosophy and framework for environmental health in the 1990s;
- the definition and incorporation to the *Act* of concepts such as "environmental health", "hazard", "risk" and others presently not in the *Act*;
- conflict of interest guidelines for local health unit board members;
- provisions to ensure the *Act* also applies to the Crown;
- rationalization, integration and updating of regulations to the *Act* - taking into consideration previous work not implemented after the 1984 revisions to the *Act*;

- an ongoing process and timetable for legislative review.

Standards: The role of staff will be to

- contribute to the efforts of Alberta Health, the Public Health Division and the health system to establish a philosophy of standards, their relationship to legislation and regulations, and their application by local health units. This role should be conducted within the pending Alberta Health Accountability Strategy;
- standards and ways of incorporating them into regulation as appropriate.

E.13. Responsibilities are designated within the Environmental Health Program for liaison with key government departments, boards and agencies and corresponding partner contacts are established.

A first step to good intersectoral relations is to establish a communication channel. This would improve on present arrangements which have *ad hoc*, poorly defined linkages that need to be institutionalized.

E.14. A collaborative process is established that includes the formation of an interdepartmental committee to provide intersectoral input at an early stage in the development of regulations with environmental health implications.

There should be a standing committee of working level staff responsible for reviewing proposed changes to environmental health regulations before the formal legislative review process gets too far on. The purpose of the committee would be to review proposed regulatory concepts and strategies, specific proposals for amendments to regulations, or the development of new ones. Notice of problems leading to intention to initiate changes in regulations should precede the submission of proposals for interdepartmental review.

The success of the committee will be determined largely by the degree of institutional linkages and direction given by each Department to its representative to consult with partners, rather than by rigid definition of committee procedures. Committee memberships should be specified, although attendance may depend on issues raised. Representation should include, at least, the departments of Agriculture, Environment, Health, Public Safety Services, Labour, and representation from the local health units. The chair of the committee need not be a person from Health.

5.3 THE ESSENTIAL OPTION continued...

E.15. The Environmental Health Program strengthens its partnerships at the provincial core, formalizing operational processes and areas of cooperation and joint activity with its partners in government departments, boards and agencies that are involved in environmental health. This is done by developing Memoranda of Understanding (MOU), Letters of Agreement (LA), and other arrangements within the appropriate protocol requirements required by Alberta health and the partners involved.

Examples of possible areas for inclusion in MOUs and LAs include:

- *operational and jurisdictional matters* - Alberta Environment, Alberta Agriculture, Alberta Occupational Health and Safety, Alberta Labour, Alberta Public Safety Services, etc.
- *training support and advice* - Health and Welfare Canada, Alberta Environmental Centre, ERCB, CEARC.
- *development of expert systems to assist with monitoring and surveillance/informatics development* - Advanced Computing and Engineering Department of the Alberta Research Council.
- *responding to the public* - Alberta Environmental Council.
- *short and longer term personnel exchanges to develop new skills* - Health and Welfare Canada.

E.16. The Environmental Health Program improves its capacity to involve and respond to the public by (1) developing mechanisms to communicate authoritatively on matters of individual and public concern; and (2) strengthening and extending local initiatives in health promotion aimed at citizen action, which serve to promote well-being and prevent environment-related disease and injury and to improve environmental conditions affecting health.

5.3 THE ESSENTIAL OPTION continued...

This element calls first, for building on the interagency linkages proposed in preceding elements, to develop a coherent and accessible response capacity in Alberta government. Whether or not a "single window" mechanism for program responsibility rather than advisory responsibility would be feasible, desirable, or sufficient, developing such capacity is a task that clearly requires collaboration between sectors and governments in its design. The design process might well benefit from advice and consultation with relevant public interest groups. Assuming further that the other elements of this Essential option improve the technical base and information management capacities of Alberta Health in this field, its Public Health Division would necessarily be an important contributor to this development, further enhancing the potential role of local health units in the response mechanism.

Second, advantage should be taken of the circumstance that the current effort to improve the effectiveness of environmental health runs in parallel with efforts to define, plan and implement activities in health promotion. This circumstance permits, in the short term, the supplementing existing skills in inspection and regulation with skills in education and community organization. In the longer term, it holds the promise of developing more comprehensive environmental health programs to serve the people of the province, by enabling them to contribute directly, positively and responsibly to the enhancement of their health potential. Current activities in several health units and the organization of **Healthy Community** efforts in various localities indicate possibilities.

Adding a new staff position with technical knowledge and skills in hazard identification and risk communication, including skills in applied communication theory is a valuable way improve program capacity to respond to public concerns (pp 45-47). An important role for this position would be to find out specifically what concerns people, and who in Alberta outside Alberta Health has expertise and credibility in the specified areas. Given the large number of "action requests" on health impacts received by Alberta Health, Alberta Environment, and the health units, a database of issues can be developed and analyzed. As well, a database of individuals with credibility related to the issues should be established. This would lay the groundwork for developing hazard identification and risk communication strategies and identify a wide range of resources to help implement them. Liaison with the Environmental Council of Alberta in this regard would be valuable, since they produce certain information packages on environmental topics that may be helpful for dealing with public requests for information.

5.3 THE ESSENTIAL OPTION continued...

E.17. Alberta Health, through the Environmental Health Program, establishes a Task Force to delineate guidelines for approving and conducting community baseline studies. The Task Force comprises representatives of the public, local health units, industry, academics, with the secondment from Health and Welfare Canada and the Canadian Environmental Assessment Research Council. The guidelines should be made available in one year.

In the interim, (1) requests for baseline studies should be critically evaluated taking into full account the probability of the study being able to detect any health effect; (2) baseline measurements of environmental and population exposures before an industry is established in an area may be useful in ensuring that the plant does not give rise to significant exposures for the population when operating; (3) new large companies be asked to establish health monitoring programs for their employees to determine whether exposures, which inside a plant are considerably greater than outside, produce any adverse effects. Such reports will be of value both to the plant owner and to the community. The possibility of joint sponsorships to cover the costs of the task force should be explored.

At the Health Units

E.18. Continuing education to upgrade present skills of Public Health Inspectors in areas involving the wider domain for the Environmental Health Program is jointly planned by the Environmental Health Program, health units and other environmental health agencies. The continuing education is delivered through appropriate mechanisms.

Continuing education should focus on seminars, conferences, and inservice modules on the following topics:

- priority outcomes and their relationship to epidemiology and toxicology, including outcomes of more common chemical and physical hazards,
- risk assessment, risk management,
- rationalizing program development through application of the Risk Determination Model,
- practice and issues in Environmental Impact Assessment (EIAs) and incorporating health into EIAs,
- community education, risk communication.

5.3 THE ESSENTIAL OPTION continued...

The intent is to upgrade Public Health Inspection skills for the wider domain of environmental health issues in E.8. This element does not deal with the longer term issue of what level of training is required for Public Health Inspectors nor an examination of their function in environmental health.

Assistance in organizing and delivering these courses should be sought and arranged through Letters of Agreement MOUs and other means with partners in the field: the Alberta Environment Centre (toxicology), Health and Welfare Canada (risk assessment, risk management, risk communication epidemiology), ERCB and Alberta Environment (EIA processes).

There would be considerable benefit in asking industry to support these efforts by contributing, both in terms of faculty and funding. In addition, the Health Unit Association of Alberta could play a valuable role in coordinating the timing of these efforts, and perhaps become a vehicle to implement them.

E.19. Alberta Health increases funding to Environmental Health programs at the health units as an interim measure to provide relief from present workload pressures. Longer term funding changes depend on the results of a review by the Public Health Division, in conjunction with the health units, of the epidemiological justification of present inspection mandates and strategies, in order to ensure that all related sector resources are being considered and effectively allocated to priority outcomes, including those in the wider domain of mandates established in element E.8.

We concluded that the local health units are under real pressure. The problem appears to be the competition for resources between routine inspections and dealing with non-traditional issues, many of which involve chemical and physical hazards (p 129).

Health in EIAs

E.20. Comprehensive Environmental Health Impact Assessment is made a requirement, at least at the screening stage, of all EIA processes in Alberta, with appropriate inclusion in the proposed Environmental Protection and Enhancement Legislation (and in its definition of "adverse effects"), and the Natural Resources Conservation Board Act. Health is understood in its wider definition.

5.3 THE ESSENTIAL OPTION continued...

E.21. Alberta Health initiates a cooperative process among appropriate government agencies, industry and the public to develop guidelines and screening criteria for including health in EIAs.

These criteria should include a core grouping of generic, provincial level issues but be flexible enough to allow for industry and regional/community variation. They also should take cognizance of the importance of cumulative effects and implications of a proposed action/project for sustainable development.

E.22. Public Health Units do not participate in the formal decision making process with respect to formal EIA and related regulatory processes (including reviews under the auspices of the ERCB and the proposed NRCB). Their role is the provision of credible advice on health impacts, and referral of community members seeking it to other credible sources when such information is not obtainable locally.

We believe this is the best approach for ensuring the local health units retain objectivity in their role as advocates for health. They must be able to provide credible advice to their community members or refer them to other credible sources. Local health units should be enabled and empowered to act as a primary but independent resource for concerned citizens, and a communication link for the government and proponents in the assessment of health effects (preferably through mediation rather than confrontational processes).

Since it is unrealistic and not feasible to provide every health unit with the range of specialist technical expertise necessary to carry out this role, procedures should be developed and implemented to allow for temporary secondment of appropriate personnel from any department of the Alberta Government, where available. When the required expertise is not available from within government, funding should be made available to acquire this assistance from third parties. This could be provided through interval funding provisions of various regulation processes.

E.23. Alberta Health, specifically the Environmental Health Services Program, raises its profile significantly and become an active participant in all major project EIA processes, and through screening provisions, in any other projects with potentially significant human health implications, including issues and area where the public perceives a health risk.

5.3 THE ESSENTIAL OPTION continued...

The method for achieving this participation will require the development of protocols similar to those which exist between Alberta Environment and the ERCB which are envisioned by Sections 15 and 22 of the proposed Natural Resources Conservation Board Act.

Though there is scientific uncertainty with respect to many environmental health effects and a scarcity of technical and financial resources for this purpose, within Alberta Health at the current time, experience with the practical requirements of the resource/environmental management process and its other stakeholders would in our view justify this increased effort. We believe the public will increasingly demand this involvement in any event.

Public Health Inspection

E.24. The Public Health Division commissions a study, with input from appropriate stakeholders, to examine present and future functional requirements in environmental health and their implications for the role and training requirements of Public Health Inspectors. The issues to be addressed include those outlined in this report on pp 132, 133.

Future training requirements for entry into the professional category of Public Health Inspector need to be linked with the longer term issue of the future role of Public Health Inspectors in environmental health. Initiatives presently underway by Concordia College in Edmonton and other post-secondary institutions in Alberta, and the concerns of many Public Health Inspectors lend urgency to such a study. While we have noted that we believe it is not the role of government to determine whether a baccalaureate level training is required for entry into this professional category, we believe it is a responsibility of government to examine future functions of environmental health and derive implications they may hold for manpower requirements and their associated training needs. We therefore include the above study in the **Essential Option**.

5.4 WIDER OPTIONS

The **Wider Options** that follow present approaches for further strengthening and developing the system of environmental health services delivering in Alberta. They have potential for implementation over the next three to five years. Some of the **Wider Options** deal with issues whose resolution may require major changes to present arrangements. Others are for consideration only if elements of the **Essential Option** fail to generate sufficient improvement in system level performance.

5.4 WIDER OPTIONS continued...

Strengthening Local Health Unit Capacities in Environmental Health

Making local health units more effective in environmental health entails the following strategies, each of which is then described in some detail:

- Improving the potential of existing resources to work on priority problems in environmental health.
- Improving the stability, versatility, and quality of human resources for environmental health work.
- Developing linkages necessary for effective environmental health activities within local health units and with other agencies of government, private entities, and citizen organizations.
- Improving the information base for local health unit work in environmental health, including appropriate participation in the health aspects of environmental impact assessments.
- Providing the basis for needed critical mass and specialization for environmental health work in local health units.

W.1. Improving the potential of existing resources to work on priority problems in environmental health.

Current environmental health activities in local health units are primarily regulatory, carried out through the inspection function, and directed to the control of communicable disease. Whether some part of the resources devoted to these activities could be reallocated to preventive work on chemical and physical hazards, including injury control, is a controversial issue. One opinion holds that, while there is an irreducible minimum of existing activities necessary to maintain defense against significant microbiological health hazards, some portion of public health inspector resources should be reassigned to "new" and more dangerous hazards. The contrary opinion points to the "mandating" of activities through law and regulations and notes that, in those terms, recent losses of personnel and instabilities in tenure make it impossible to accomplish the mandated activities - that "irreducible minimum" is not being served. Meanwhile, the uncertainty over whether existing staff are being used to best advantage forecloses issues of either adding or supporting qualitative improvements in staffing.

5.4 WIDER OPTIONS continued...

Lacking to resolve the issue are (1) an updated epidemiological justification of current priorities in communicable disease control or, alternatively, identification of low priority activities; and (2) systematic reconsideration of alternative strategies and methods to accomplish the necessary inspection functions.

Meeting the first of these requirements clearly requires that added skills in epidemiology proposed as a core element be assigned early to work in concert with other resources in the Public Health Division and Universities to review the relative importance of current "mandates" in the spectrum of environmental health hazards in Alberta.

In addition to the possible altering of priorities, systematic investigation of current inspection methods should be undertaken. Experiences with inspection functions in other Alberta agencies have resulted not only in streamlining the conduct of inspections and their timing, but also give evidence that some burden can be shifted to operators of the facilities inspected, with the governmental agency taking an audit role, and that careful selection of the process stage to be inspected also can reduce the volume of work; an important element in these approaches is to make inspections norms clearer and better known. Also relevant is the possibility of relying more on complaints as the "trigger" for inspections. Provincial agencies such as Occupational Health and Safety, Public Safety Services, and Agriculture, have volunteered to share their experiences with Alberta Health if this approach is taken.

W.2. Improving the stability, versatility, and quality of human resources for environmental health work.

Beyond the provision of continuing education aimed at improving the familiarity of public health inspectors with current problems and up-to-date approaches in environmental health, which is essentially a "stopgap" measure, both the administrative situation and the requirements of an adequate environmental health system justify a major revision in the career structure and technical preparation of this important resource. Vacancies and high turnover rates are damaging to the work and staff morale and indicative of underlying problems of role obsolescence and frustrations with job activities and low status. Further, if revisions result from the preceding suggestion of capturing staff time to undertake new responsibilities, upgrading staff capacities will be essential, both with respect to technical content and intervention skills.

5.4 WIDER OPTIONS continued...

An integrated and comprehensive approach should be taken to such changes, including the redefinition of functions, the clarification of skill requirements, program needs for specializations, the structuring of supervision and accountability, and the resulting configuration of qualifications. On such a basis, rational arrangements can be developed for the phased upgrading of career staff and for educational programs to prepare new and replacement personnel. Merely changing titles or basing training on what educational institutions can now provide would not be an adequate response to the need.

W.3. Developing linkages necessary for effective environmental health activities within local health units and with other agencies of government, private entities, and citizen organizations.

Medical Officer of Health/Chief Executive Officer leadership should moderate a process of linking environmental health with other program elements in local health units perhaps emphasizing joint programming exercises. The obvious and immediate target is the linkage of environmental health with health promotion (the local counterpart of the Provincial action described in E.16 of the Essential Option), for which the experience of several local health units already provides a source of guidance. Among other benefits, this approach can advance the potential for constructive interactions with local private entities and citizen groups.

Another target is to increase the sensitivity and awareness to environmental factors in injury and illness by local health unit staff providing services to the home-bound and disabled.

Under Alberta Health leadership, norms and protocols should be established for orderly interactions with other sectoral agencies, not all of whom are represented at the local level, to increase collaboration in various measures of environmental health protection, including disaster response.

W.4. Improving the information base for local health unit work in environmental health, including appropriate participation in the health aspects of environmental impact assessments.

As provincial information management capacities are strengthened within Alberta Health and in networks with partner agencies, local health units should be enabled to access the resulting data bases, in order to improve responsiveness to the public, technical quality of services, and capabilities to participate in EIAs and other regulatory activities.

5.4 WIDER OPTIONS continued...

Further, as standards are strengthened and updated, the Environmental Health Services Branch in collaboration with the local health units, should develop a more effective management information system, as a basis for program planning, human resources allocation to priority needs, quality controls of services, and the satisfaction of accountability requirements, explicit or implied.

W.5. Providing the basis for needed critical mass and specialization for environmental health work in local health units.

Some smaller health units are so thinly staffed for environmental health work as to generate the dual problem of difficulties in ensuring the qualitative adequacy and coverage of current responsibilities, and crippling difficulties in undertaking new, needed responsibilities. Specialization likely be required for the latter is simply not feasible with inspection staffs of three or four persons. This situation clearly presents a dilemma between the benefits and advantages of established patterns of local relationships and the demands of effective environmental health programming. The difficulty is made more acute because local health units that lack critical mass for environmental health work may have such resources for other public health programs.

Several alternatives can be considered, including consolidations of some smaller units (made technically and logistically feasible by changes in information, communication, and transportation technology in recent decades) and systematic extension and formalization of cooperative working arrangements that some units have worked out among themselves. One factor that inhibits the citing of preferred alternatives is the current uncertainty surrounding proposals for regionalizing Alberta Health programs and how the Government's decision will impact the organization of public health.

Medical Officer Requirements

W.6. Commissioning a study on ways to meet staffing requirements for medical officers at the health units, including an examination of the feasibility of non-medical training at the graduate level for meeting the needs of this function, as has occurred in North Carolina and some US jurisdictions.

We discussed in section 4.6.2. (pp 130 - 131) the problems of vacancies in medical officer of health positions in the province at the health units and the qualifications of many existing medical officers. The proposed study would address this important manpower issue. We suggest the Public Health Division Commission the study.

5.4 WIDER OPTIONS continued...

The next two Wider Options offer alternatives for consideration depending on how intersectoral intersectoral cooperation and coordination evolves as a result of implementing the Essential Options.

Options for Cooperation and Coordination

W.7. Shifting and expanding the role of the Environmental Council, not to take executing responsibility as in the Rainbow Report, but to serve as a convenor that is somewhat neutral and seems to enjoy an "arm's length" status; a sub-council on health could be a possibility.

We have already noted the desirable link between the Environmental Health Services Branch and the Council on developing material on hazards to health in the environment. A possibility exists to formalize the role of the Council in health and further its partnership with Alberta Health in relations with the public and other government departments and agencies.

W.8. Reintroducing a supra-departmental coordinating entity reporting to Executive Council.

The easiest way would be to go back to the idea of the old Provincial Board of Health. We are not persuaded that there is reason to change the present role of the Public Health Advisory and Appeal Board (PHAAB), since it appears to serve an important function and work well. In any case, a supra-departmental coordinating entity might better be mandated through other legislation, not necessarily under Alberta Health. The Natural Resource Advisory Committee (E.3., p 146) could also be adapted for this purpose, but with Alberta Health taking a lead role.

Extending EIAs and Their Health Requirements

W.9. Incorporating EIAs, and specifically health requirements into Alberta's municipal, regional and integrated resource planning systems.

While it may go beyond the mandate of this report to develop options concerning the general nature and extent of EIAs and other resource management and regulatory processes in Alberta, we believe that both impact assessment (which includes health), and health status monitoring relate better to long term prediction and evaluation of cumulative effects than to project-specific processes. For this reason Alberta Health probably should support any initiatives in respect of W.9.

5.5 LIST OF ALL STRATEGIES

Elements at the Ministerial Level

E.1. Government confirms that the role of the Minister of Health is to provide advice to Executive Council on measures required to promote and protect human health in the face of biological, chemical and physical hazards in the environment. Health is understood as a state of complete physical, mental and social well-being, not merely the absence of disease and injury.

E.2. Future mandates for environmental health are clarified by designating the Minister of Health and Alberta Health in emerging and all subsequent new and amended legislation with responsibility for regulated matters that have possible human health implications. Specifically, the proposed *Environmental Protection and Enhancement Legislation*, the *Natural Resources Conservation Board Act*, and the *Uniform General Safety Act* are reviewed to identify areas of appropriate designation. The matters designated are jointly recommended by Alberta Health and the department sponsoring the new legislation, according to a protocol developed for the purpose and approved by Government.

E.3. The Minister develops, jointly with her colleagues of Executive Council, a communication strategy for managing the public release of data regarding substances in the environment that are causing a significant real or perceived hazard to human health. The policy involves an interdepartmental mechanism that is time limited, and produces decisions on responsibility for content of the communication.

Strengthening Ministerial and Alberta Health Commitment to the Public

E.4. The Minister of Health directs Alberta Health to incorporate the concept of sustainable development into her department's Mission Statement, departmental roles, goals and objectives.

E.5. The Minister of Health and the Minister of the Environment jointly prepare and publish on behalf of the Government of Alberta an annual report to the people of the Province on the State of Environmental Health in Alberta - the Health of the Environment and the Health of the People, in the face of biological, chemical and physical hazards to human health in the environment. The contents of the report evolve as new ways of documenting and measuring health status and the state of the environment are developed.

E.6. The annual State of Environmental Health report and Alberta Health's Mission, roles, goals and objectives, reflect the principles and distinctions of health, the human ecosystem, and sustainable development as expressed in section 2.1, 2.2 and 4.3 of this report.

E.7. The Public Health Division of Alberta Health, and specifically staff in its Environmental Health Program, are mandated to assist the Minister of Health with the preparation of the annual report on the State of Environmental Health, by working jointly with officials from Alberta Environment on a Standing Committee of Alberta Health and Alberta Environment established for this purpose.

5.5 LIST OF ALL STRATEGIES continued...

The Public Health Division

E.8. The Public Health Division adopts the wider definition of health and its determinants, and ensures its role, functions and structure integrate environmental health services throughout the Division. Within this context, the Division adopts the following priority outcomes as the minimum domain for the Program presently under the Environmental Health Services Branch:

- *Communicable disease* from (a) food-borne organisms, (b) water-borne organisms, (c) air-borne organisms, and (d) faecal-oral route; and the Division makes these outcomes more specific by targeting particular species such as *E. coli 0157* and others.
- The small proportion of *cancers* that are induced by excess radiation and chemical contaminants in food, water and air.
- *Reproductive outcomes* including infertility and developmental problems, as well as congenital abnormalities, from chemical contaminants in food, water and air.
- *Stress outcome* from noise and odour.
- *Respiratory and allergy* outcomes from chemical and particular agents.
- *Injury* associated with certain acute chemical spills and certain mechanical hazards in residences and public places.

E.9. The Environmental Health Services Branch and its staff work collaboratively with technical resources in other government departments, boards and agencies, other branches in the Public Health Division, and other parts of Alberta Health that have mandates and policy concerns relevant to environmental health.

E.10. The Public Health Division, through the leadership of the Environmental Health Services Branch, and in collaboration with the local health units and its other Branches, develops statements of vision and environmental health objectives for consideration by Alberta Health, the Public Health Division and the local health units. The statements reflect and sustainable development expressed in sections 2.1, 2.2 and 4.3 of this report. This effort is to be integrated into the general goal setting process conducted by Alberta Health.

E.11. Expert staff resources representing new skills in epidemiology/environmental health biology, toxicology, and monitoring and surveillance/informatics are added to the Environmental Health Program with roles as designated in this report.

5.5 LIST OF ALL STRATEGIES continued...

E.12. Staff resources are added to the Environmental Health Program in order to (1) catch up with the outstanding work of reviewing and updating the Public Health Act and Regulations, and developing standards, and (2) to contribute to ongoing review and assessment of health impacts of legislation, regulations, and policies of Alberta Health, the health units and other departments, boards and agencies.

E.13. Responsibilities are designated within the Environmental Health Program for liaison with key government departments, boards and agencies and corresponding partner contacts are established.

E.14. A collaborative process is established that includes the formation of an interdepartmental committee to provide intersectoral input at an early stage in the development of regulations with environmental health implications.

E.15. The Environmental Health Program strengthens its partnerships at the provincial core, formalizing operational processes and areas of cooperation and joint activity with its partners in government departments, boards and agencies that are involved in environmental health. This is done by developing Memoranda of Understanding (MOU), Letters of Agreement (LA), and other arrangements within the appropriate protocol requirements required by Alberta health and the partners involved.

E.16. The Environmental Health Program improves its capacity to involve and respond to the public by (1) developing mechanisms to communicate authoritatively on matters of individual and public concern; and (2) strengthening and extending local initiatives in health promotion aimed at citizen action, which serve to promote well-being and prevent environment-related disease and injury and to improve environmental conditions affecting health.

E.17. Alberta Health, through the Environmental Health Program, establishes a Task Force to delineate guidelines for approving and conducting community baseline studies. The Task Force comprises representatives of the public, local health units, industry, academics, with the secondment from Health and Welfare Canada and the Canadian Environmental Assessment Research Council. The guidelines should be made available in one year.

At the Health Units

E.18. Continuing education to upgrade present skills of Public Health Inspectors in areas involving the wider domain for the Environmental Health Program is jointly planned by the Environmental Health Program, health units and other environmental health agencies. The continuing education is delivered through appropriate mechanisms.

5.5 LIST OF ALL STRATEGIES continued...

E.19. Alberta Health increases funding to Environmental Health programs at the health units as an intem measure to provide relief from present workload pressures. Longer term funding changes depend on the results of a review by the Public Health Division, in conjunction with the health units, of the epidemiological justification of present inspection mandates and strategies, in order to ensure that all related sector resources are being considered and effectively allocated to priority outcomes, including those in the wider domain of mandates established in element E.8.

Health in EIAs

E.20. Comprehensive Environmental Health Impact Assessment is made a requirement, at least at the screening stage, of all EIA processes in Alberta, with appropriate inclusion in the proposed Environmental Protection and Enhancement Legislation (and in its definition of "adverse effects"), and the Natural Resources Conservation Board Act. Health is understood in its wider definition.

E.21. Alberta Health initiates a cooperative process among appropriate government agencies, industry and the public to develop guidelines and screening criteria for including health in EIAs.

E.22. Public Health Units do not participate in the formal decision making process with respect to formal EIA and related regulatory processes (including reviews under the auspices of the ERCB and the proposed NRCB). Their role is the provision of credible advice on health impacts, and referral of community members seeking it to other credible sources when such information is not obtainable locally.

E.23. Alberta Health, specifically the Environmental Health Services Program, raises its profile significantly and become an active participant in all major project EIA processes, and through screening provisions, in any other projects with potentially significant human health implications, including issues and area where the public perceives a health risk.

Public Health Inspection

E.24. The Public Health Division commissions a study, with input from appropriate stakeholders, to examine present and future functional requirements in environmental health and their implications for the role and training requirements of Public Health Inspectors. The issues to be addressed include those outlined in this report on pp 132, 133.

5.5 LIST OF ALL STRATEGIES continued...

Strengthening Local Health Unit Capacities in Environmental Health

W.1. Improving the potential of existing resources to work on priority problems in environmental health.

W.2. Improving the stability, versatility, and quality of human resources for environmental health work.

W.3. Developing linkages necessary for effective environmental health activities within local health units and with other agencies of government, private entities, and citizen organizations.

W.4. Improving the information base for local health unit work in environmental health, including appropriate participation in the health aspects of environmental impact assessments.

W.5. Providing the basis for needed critical mass and specialization for environmental health work in local health units.

Medical Officer Requirements

W.6. Commissioning a study on ways to meet staffing requirements for medical officers at the health units, including an examination of the feasibility of non-medical training at the graduate level for meeting the needs of this function, as has occurred in North Carolina and some US jurisdictions.

Options for Cooperation and Coordination

W.7. Shifting and expanding the role of the Environmental Council, not to take executing responsibility as in the Rainbow Report, but to serve as a convenor that is somewhat neutral and seems to enjoy an "arm's length" status; a sub-council on health could be a possibility.

W.8. Reintroducing a supra-departmental coordinating entity reporting to Executive Council.

Extending EIAs and Their Health Requirements

W.9. Incorporating EIAs, and specifically health requirements into Alberta's municipal, regional and integrated resource planning systems.

6. GETTING TO BROAD STREET: OUR RECOMMENDATIONS

We conclude this report with our recommendations, their estimated budget impact, and further planning requirements. Our closing remarks review the major milestones on our journey in search of Broad Street and the new version of John Snow's pump. Some of the milestones are reflected in Exhibit 37, which continues for several pages in this last chapter.

6.1 RECOMMENDATIONS

We recommend the approval and timely implementation of the **Essential Options** comprising elements E.1.-E.24. inclusive. This option:

- clears up the matter of "Who Speaks for Human Health in Alberta?" (E.1.-E.3.);
- establishes a positive government response to public concern about the health-environment link, by having the Ministers responsible for the two principal departments involved the Minister of Health and the Minister of the Environment, report annually to Albertans on the Status of Environmental Health -the Health of the Environment and the Health of the People (E.5.-E.7.);
- sets out a mandate for the Environmental Health Program of Alberta Health that includes traditional and expanded areas of responsibility; provides for necessary new resources; strengthens processes and procedures for *inter* and *intra* sectoral cooperation and collaboration (E.9.-E.17.).
- initiates upgrading of Public Health Inspectors' skills to meet the needs of their new mandate and provides interim relief to pressures faced by local health units in their Environmental Health programs (E.18.-E.19.);
- introduces health into Environmental Impact Assessment processes (E.20.-E.23.); and
- establishes an important study to review future functions of environmental health and their implications for the role of Public Health Inspectors and their training.

In our view, the **Essential Option** provides a sound basis for dealing with critical problems in delivery of services in the short term, yet establishes a framework that provides direction for the longer term. The option is responsive to public concerns, to intersectoral and health sector input, and to contemporary trends in health service delivery.

6.1 RECOMMENDATIONS continued...

We further recommend that the **Wider Options** comprising strategies W.1.-W.9. be considered for potential implementation at an early date. In particular, we support early action toward strengthening local health unit capacities in environmental health (W.1.-W.5.) recognizing that a large part of improving delivery of environmental health services depends on local-level activities. Although implementation of these wider options must necessarily wait upon the building of provincial-level resources, frameworks, technology and mechanisms, early attention should be given to further clarifying problems and needs, mutual expectations, and detailed alternatives - and their costs. The process for doing this can be advanced through provincial-local cooperation in certain elements of the Essential Option, notably E.10. (vision and goal statements), E.12. (updating legislation and regulations), E.14. (intersectoral work on regulations), E.18. (continuing education for Public Health Inspectors), E.16. (strengthening public response and involvement), and E.17. (delineation of guidelines for baseline studies).

6.2 RESOURCE IMPLICATIONS

Direct cost implications of the **Essential Option** to the Environmental Health Services Branch budget can be estimated in a preliminary way.

- One new staff position is recommended in each of the following: (1) environmental health biology/epidemiology, (2) toxicology, (3) monitoring and surveillance/informatics, (4) hazard identification and risk communication, (5) senior inspector, field liaison, for ongoing standards and regulation development; (6) environmental health engineering, to assist with reviews of health issues in EIAs; (7) three clerical/research officers for support. We estimate the cost of these positions to take about $500,000 including benefits.
- Part-time contracted legal services in support of regulation and legislative review and update are expected to be $60,000.
- Development costs are included for introducing expert systems to ensure optimal use of international, national, provincial data bases. These are for contracted services from the Advanced Computing and Engineering Department of the Alberta Research Council (co-developers of HERMES). The allocation for these contracted services is $100,000, to be further developed upon the advice of the Information Technology Division and input from the Advanced Computing and Engineering Department at the Alberta Research Council.

6.2 RESOURCE IMPLICATIONS continued...

- Branch hardware and software needs are estimated at $75,000, These should be confirmed in discussions with the Information Technology Division.

- The budget allocation for the Environmental Health Information Advisory Group and the Task Force on baseline studies is $20,000.

- Support for planning the upgrading initiative for Public Health Inspectors is allocated at $25,000.

- Various fixed assets (desks, workstations) and increased numbers of field visits for new and existing staff are estimated at $20,000.

- Contract funds for further planning, organizational review, and a study on the public health inspection function and its training implications are allocated at $200,000.

The total estimate for the **Essential Option** is about $1 million in direct costs above present budget levels, with the assumption that all present wage positions are made permanent fulltime.

This estimate excludes at least two cost impacts. While we have recommended increases in funding to the health units on an interim basis in order to relieve pressures of the health inspection function (E.19.), we have not indicated how large the increase should be. This matter is left for Alberta Health to resolve, if appropriate, through negotiation, or independent review.

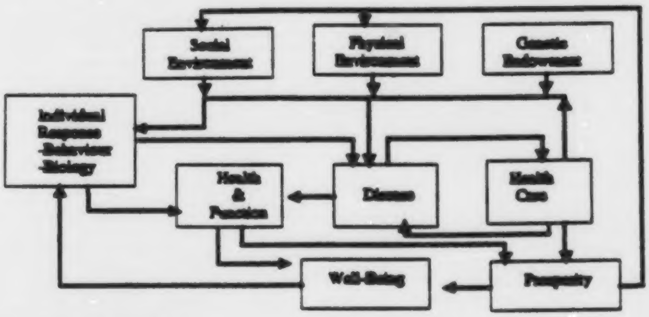
A second uncosted impact of the **Essential Option** is Alberta Health's share of costs for producing the annual report on the Status of Environmental Health in Alberta, jointly with Alberta Environment. The scope, contents, and nature of the document to be produced will determine costs. These would have to be separately estimated.

6.3 FURTHER PLANNING

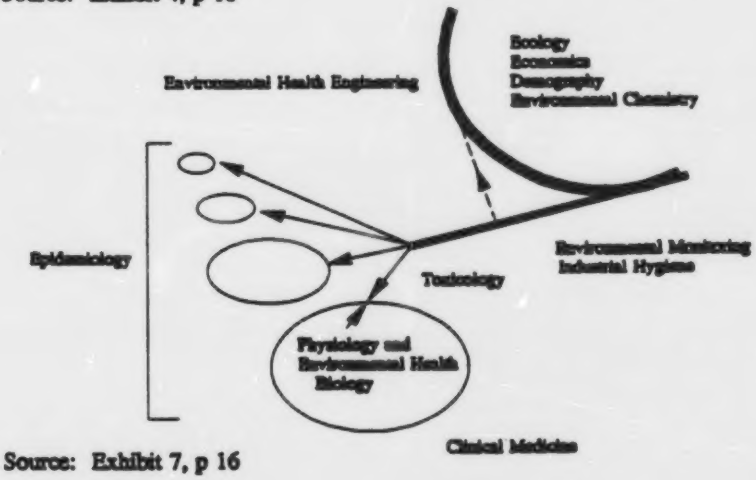
We note the Wider Options not recommended for implementation at this time may generate planning and resource requirements in the coming 1-3 year period. Implementation of any of the wider options should occur in the context of approvals arising from this report and subsequent evolution of environmental health programming in the province.

EXHIBIT 37

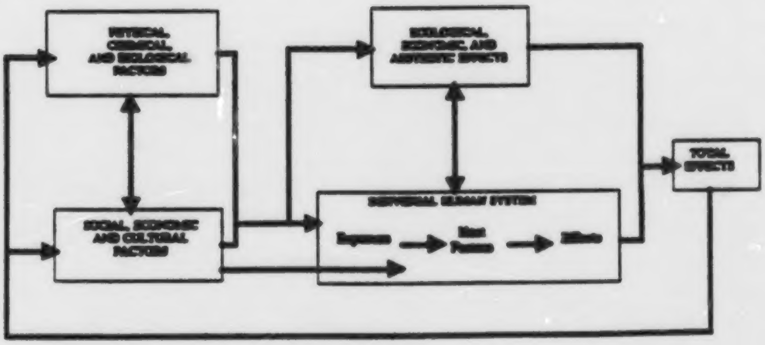
MILESTONES ON THE JOURNEY IN SEARCH OF THE BROAD STREET PUMP


Social Environment
Physical Environment
Genetic Endowment
Individual Response -Behaviour -Biology
Health & Function
Disease
Health Care
Well-Being
Prosperity

Source: Exhibit 4, p 10


Environmental Health Engineering
Ecology
Economics
Demography
Environmental Chemistry
Epidemiology
Toxicology
Environmental Monitoring
Industrial Hygiene
Physiology and Environmental Health Biology
Clinical Medicine

Source: Exhibit 7, p 16


PHYSICAL, CHEMICAL, AND BIOLOGICAL FACTORS
ECOLOGICAL, ECONOMIC, AND AESTHETIC EFFECTS
TOTAL EFFECTS
INDIVIDUAL HUMAN SYSTEM
SOCIAL, ECONOMIC AND CULTURAL FACTORS
Exposure
Host Factors
Effects

Source: Exhibit 9, p 17

6.3 FURTHER PLANNING continued...

Further planning is required to consolidate and elaborate directions adopted from this report. The present Steering Committee should reconstitute itself as an Implementation Committee to ensure continuity and monitoring of implementation against intended directions. The impact of accepted recommendations on the organization of the Public Health Division needs to be considered. We believe a review of the Division's organization structure may be necessary as a consequence of this report. As well, studies identified earlier in this report, for example, the development of a Task Force to develop guidelines for baseline studies, will entail further planning activity. Finally, we note that operational planning will be necessary to implement particular elements of the various options, for example, contributing to the planning of continuing education for upgrading Public Health Inspectors.

To begin these further planning efforts, a first step is to review the directions of this report that obtain approval and develop a plan to implement them.

6.4 CONTINUING THE JOURNEY, BUT BETTER EQUIPPED

To conclude our report, we review the milestones on our journey in search of Broad Street, the new pump and the handle we hope to dismantle (Exhibit 37). The new pump is more subtle in its output and its action than the old pump of John Snow's time. The new pump is a source of hazards because it presents us with low dose, chronic exposures to various agents whose effects are multi-causal. Whether dismantling the handle makes a difference is unclear since often we do not know which agents will cause harm.

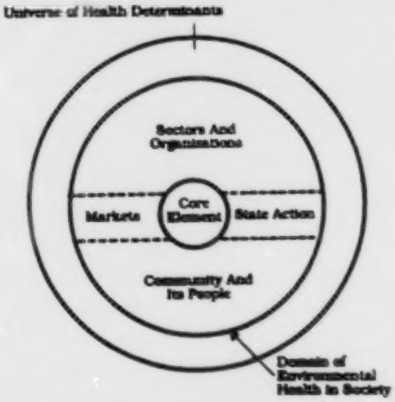
Our first milestone on the journey to Broad Street defined of health and its determinants. In this study health is viewed in its wider definition, one that goes beyond disease and injury. Health is a resource not an objective in life, and as the Minister of Health has affirmed, it is a state of complete physical, mental, social and spiritual well-being. The determinants of health outlined by Evans and Stoddart explicitly showed us the link between our health and our social and physical environments (Exhibit 4, p 10). This link fits our definition of "environmental health" as the ways human health is affected by factors in our physical and social environments.

The link between our health and the environment has been clear for some time, at least in relation to what we now know to be biological hazards. A second milestone on our journey explained the link between our health and other factors in the environment presenting hazards to it, pollution, for example.

EXHIBIT 37 continued...

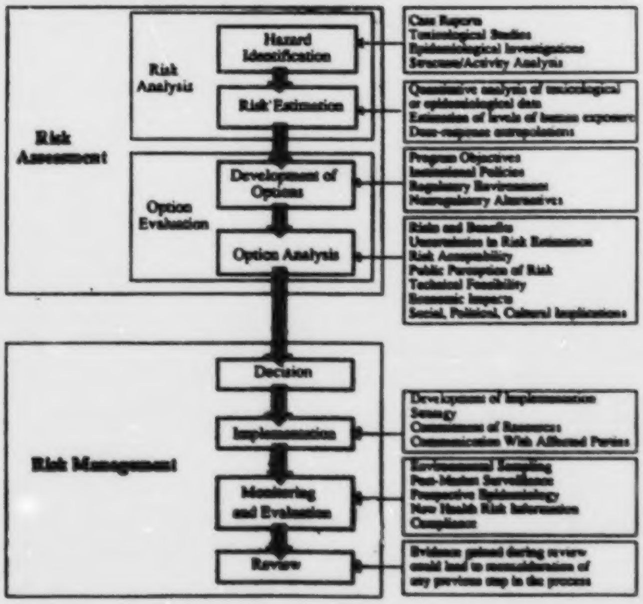
MILESTONES ON THE JOURNEY IN SEARCH OF THE BROAD STREET PUMP

A Spherical Model:
Modulation of Human Activity In the Interest of Community Health


Universe of Health Determinants
Sectors And Organizations
Markets
Core Element
State Action
Community And Its People
Domain of Environmental Health in Society

Source: Exhibit 10

A Framework for Risk Assessment and Risk Management


Risk Assessment
Risk Analysis
Hazard Identification
Risk Estimation
Option Evaluation
Development of Options
Option Analysis
Case Reports
Toxicological Studies
Epidemiological Investigations
Structure/Activity Analysis
Quantitative analysis of toxicological or epidemiological data
Estimation of levels of human exposure
Dose-response extrapolations
Program Objectives
Institutional Policies
Regulatory Environment
Nonregulatory Alternatives
Risks and Benefits
Uncertainties in Risk Estimation
Risk Acceptability
Public Perception of Risk
Technical Feasibility
Economic Impacts
Social, Political, Cultural Implications
Risk Management
Decision
Implementation
Monitoring and Evaluation
Review
Development of Implementation Strategy
Commitment of Resources
Communication With Affected Parties
Environmental Sampling
Post-Market Surveillance
Prospective Epidemiology
New Health Risk Information
Compliance
Evidence gained during review could lead to reconsideration of any previous step in the process

Source: Exhibit 14

6.4 CONTINUING THE JOURNEY, BUT BETTER EQUIPPED continued...

We recognized that pollution can be understood as a disturbance to a normally stable environmental cycle. The disturbance can generate a toxic event whose effects are spread unevenly over the population at risk (Exhibit 6, p 15). This explanation established a way to understand the link between health and the environment in relation to chemical and physical, as well as biological hazards. Guidotti and Conway gave us a valuable model which not only captures the essentials of how toxic events occur and affect our biology, but also allowed us to identify the scientific disciplines in environmental health (Exhibit 7, p 16). We then brought together the Guidotti and Conway views with the wider views of Evans and Stoddart. The latter explicitly include the effects of the social environment, and incorporate prosperity in addition to health as a contributor to well-being. Schaeffer expressed this combination in the first of his models in this report, the environmental health system (Exhibit 9, p 17).

The third milestone on our journey defined how human activity in the biosphere is modulated in the interest of community health. A second model by Schaefer, the Spherical Model portrayed the relationship between services at the local level and directional function at a central core (Exhibit 10, p 20). Its importance to our journey was key because part of the problem is who goes on the journey to Broad Street, and how are directions and adaptations along the way determined.

The fourth milestone presented methods, health promotion and specific model for Risk Determination (Exhibit 14, p 44). The methods were valuable because they added to our tool kit for dismantling the pump handle when we find it.

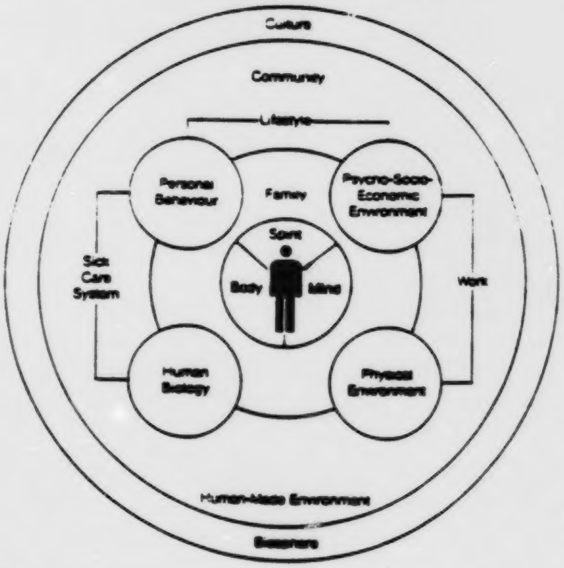
The fifth milestone determined outcomes (Exhibits 21, 22, pp 64 and 65 respectively). This was important because it showed us there are many pumps on Broad Street, some more harmful in their effects than others. Equipped with our knowledge of methods, we can establish priorities on where our efforts will be focused, which pumps will get our attention.

The sixth milestone presented the integrating vision of the human ecosystem, Hancock's Mandala of Health, and the integration of health, environment and economy (Exhibits 35, 36, pp 115 and 116, respectively). The human ecosystem concept put our environmental health perspective into the context of the biosphere. Bringing together the triad of *health*, *environment*, and *economy* formed a set of values which combine to produce quality of life. This milestone was particularly important because it sharpened our awareness of the need to think of both our biosphere and the community on Broad Street, especially when proposed projects involve the construction of more hazardous pumps. This led us to introducing health issues into Environmental Impact Assessment processes. The result expanded our perspectives, and our methods - therefore our tool kit-for dealing with the pumps.

EXHIBIT 37 continued...

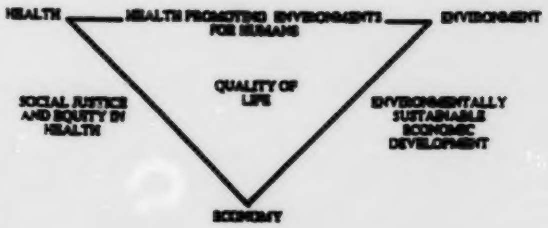
MILESTONES ON THE JOURNEY IN SEARCH OF THE BROAD STREET PUMP

The Mandala of Health
A Model of the Human Ecosystem


Culture
Community
Lifestyle
Personal Behaviour
Family
Psycho-Socio-Economic Environment
Spirit
Body
Mind
Sick Care System
Work
Human Biology
Physical Environment
Human-Made Environment
Biosphere

Source: Exhibit 35

The Linkage of Health, Environment and Economy


HEALTH
HEALTH PROMOTING ENVIRONMENTS FOR HUMANS
ENVIRONMENT
QUALITY OF LIFE
SOCIAL JUSTICE AND EQUITY IN HEALTH
ENVIRONMENTALLY SUSTAINABLE ECONOMIC DEVELOPMENT
ECONOMY

Source: Exhibit 36

6.4 CONTINUING THE JOURNEY, BUT BETTER EQUIPPED continued...

Along the way to Broad Street, we examined our strengths and weaknesses and made recommendations on preparations and resources necessary to continue our journey.

As we conclude this report, the journey continues. This report argues all parties must work together because there are many pumps and many interests involved in their use and dismantling. While many participants need to be on the journey, leadership and direction can only come from some, if the pumps of Broad Street are to be reached at all. This report argues the Environmental Health Program at Alberta Health, for one, has an obligation to demonstrate leadership but is must be given the resources to do so. The vision of the purpose of our trip, the tool kit of methods, and the knowledge of what outcomes we are to focus on are much clearer than at the outset of this report. By outlining Essential and Wider Options we offer direction to those on the journey, particularly Alberta Health and the health units. We have not reached the stage where we can point out each pump on Broad Street but the tools for dealing with them are in the travellers' hands.

The study team is confident that the directions set out in this report will lead to Broad Street, help locate and deal with the pumps, and therefore improve environmental health services in Alberta. The will to continue the journey, and the commitment to do so in a collaborative, coordinated way is the key to successful travelling and safe arrival.

APPENDIX A

LIST OF STAKEHOLDERS CONTACTED

Telephone or Personal Interview and Brief Requested

Dr. Terry Church
Director
Animal Health Division
Alberta Agriculture

Rudy A. Willhauk
Director
Plans and Operations
Alberta Public Safety Services

John Ottery
Acting Executive Director
Policy and Professional Services
Alberta Occupational Health and Safety

George Thomson
Deputy Minister
Ontario Ministry of Labour

Dr. Ken Corbett
President
Alberta Occupational Health Society

Mr. Rod McDermand
Board Chairman
Alberta Hospital Association

George Gregg
President
Canadian Institute of
Public Health Inspectors

Dr. Tom Abernathy
President
Alberta Public Health Association

Dr. John Kirkbride
President
Canadian Occupational Health Association

Gurdip Sanghera
President
American Industrial Hygiene
Association (Alberta Section)

Bob Clark
Chairman
Alberta Special Waste Management
Corporation

Dr. Phyllis Giovannetti
President
Alberta Association of Registered Nurses

Donna Tingley
Executive Director
Environmental Law Centre of Alberta

Dan Ricken
President
Canadian Institute of Public Health
Inspectors (Alberta Branch)

Dr. W. Albritton
Director
Provincial Laboratory of Public Health for
Northern Alberta

Dr. L. Francescutti
Director
Injury Awareness and Prevention Centre
University of Alberta Hospital

Dr. C. Anand
Director
Provincial Laboratory of Public Health for
Southern Alberta

Dr. Martin Barkin
Deputy Minister
Ministry of Health
Province of Ontario

Gary S. Posen
Deputy Minister
Ministry of the Environment
Province of Ontario

Telephone Interview and Brief Requested

Chris Lovelace
Acting Deputy Minister
Ministery of Health
British Columbia

Nick Poushinsky
Deputy Minister
Department of Health and
Human Resources
Government of Yukon

Bob Cowcill
Deputy Minister of Health
Government of the North West Territories

Dr. William B. MacDonald
Deputy Minister of Health
Province of Saskatchewan

Frank Maynard
Deputy Minister
Department of Health
Province of Manitoba

Wayne J. Grady
Deputy Minister
Department of Health and Fitness
Province of Nova Scotia

Jean-Guy Finn
Deputy Minister
Department of Health and
Community Services
Province of New Brunswick

Dr. Robert J. Williams
Deputy Minister
Department of Health
Government of Newfoundland
and Labrador

Mrs. Verna Bruce
Deputy Minister
Department of Health and Social Services
Province of Prince Edward Island

Andre Trudeau
Sous-ministre
Ministere de l'Environnement
Gouvernement du Quebec

Andre Dicaire
Sous-ministre
Ministere de la Sante et des Services
sociaux
Government du Quebec

Richard Dalon
Deputy Minister
Ministry of Environment
Province of British Columbia

Mr. Julian H. Walker
Deputy Minister
Department of Environment
Province of New Brunswick

John M. Fleming
Deputy Minister
Department of Environment and Lands
Province of Newfoundland

Jim Bourque
Deputy Minister
Department of Renewable Resources
Government of the North West Territories

Armand Pinard
Deputy Minister
Department of the Environment
Province of Nova Scotia

Telephone Interview and Brief Requested

continued...

Kenneth F. DesRoches
Deputy Minister
Department of the Environment
Province of Prince Edward Island

Les Cooke
Deputy Minister
Department of the Environment
and Public Safety
Province of Saskatchewan

W.J. Klassen
Deputy Minister
Department of Renewable Resources
Government of the Yukon

Tanner Elton
Deputy Minister
Department of Environment
Province of Manitoba

Dr. Louis Berlinquet
Directeur-General
Institut de Recherche en sante et en
securite du travail du Quebec

To be Informed of Study by RMC and Brief Requested

Dr. Clark Hazlett
Chairman
Health Administration and
Community Medicine
Faculty of Medicine
University of Alberta

Dr. Edgar J. Love
Director
Department of Community Health Sciences
Faculty of Medicine
Health Sciences Medical School
University of Calgary

Dr. N. Steinmetz
McGill Faculty of Medicine

Mr. C.L. Young, M.Ed.
Program Head,
Environmental Health
- Public Health Inspection
B.C. Institute of Technology

Tim Sly, M.Sc.
Head, School of Environmental Health
Ryerson Polytechnical Institute

Dr. Robert Rogers
Associate Professor of Biology
Concordia College

Dr. D. Burroughs
Tucson Medical College

Dr. I. Brownlie
Canadian Chemical Producers Association

Mr. L. McGinnis
Centre for Sustainable Development

Ms. Faith Blight
Chairperson
Alberta Council on Smoking and Health

Ms. Cindy Struthers
President
Learning Disabilities Association
of Alberta

Mr. Ray Robinson
Executive Director
Federal Environmental Assessment
Review Office

Personal Interviews and Brief Requested

Archie R. Grover
Deputy Minister
Alberta Municipal Affairs

Stan Remple
Deputy Minister
Family and Social Services

Kenneth C. Pals
President and Chief Executive Officer
Workers Compensation Board

Glen Hyslop
Acting Deputy Minister
Albert Labour

Ken Broadfoot
Deputy Minister
Alberta Technology, Research and
Telecommunications

M.F. Kanik
Deputy Minister
Alberta Energy

G.J. DeSorcy
Chairman
Energy Resources Conservation Board

G.L. Duncan
Deputy Minister
Alberta Advanced Education

C.B. Smith
Deputy Minister
Alberta Forestry, Lands and Wildlife

Vance A. MacNichol
Deputy Minister
Alberta Environment

Dr. Sherman Weaver
Executive Director
Alberta Environmental Centre

H.B. McEwan
Deputy Minister
Alberta Agriculture

I.D.M. Egener
Managing Director
Alberta Public Safety Services

Dr. Hugh Walker
Managing Director
Alberta Occupational Health and Safety

Rheal J. LeBlanc
Deputy Minister
Alberta Health

Don Junk
Assistant Deputy Minister
Policy and Planning Services
Alberta Health

Don Phillipon
Assistant Deputy Minister
Hospital Services Division
Alberta Health

Dick Alvarez
Assistant Deputy Minister
Information Technology Division
Alberta Health

Dr. K.W. Hodgins
Assistant Deputy Minister
Public Health Division
Alberta Health

Personal Interviews and Brief Requested

continued...

Trevor Hodge
Director
Program Support and Services
Alberta Health

Ken Smith
Assistant Deputy Minister
Environmental Protection Services
Alberta Environment

Dr. C.W. Bowman
President
Alberta Research Council

Margaret Catley-Carlson
Deputy Minister
Health and Welfare Canada

Kevin McLeod
Manager - Operations
Environmental Health Services

John Shaw
Environmental Health Engineer
Environmental Health Services

James Steele
Food and Microbiology Specialist
Environmental Health Services

Debra Mooney
Environmental Health Consultant
Environmental Health Services

Pat Reeder
Information Manager
Environmental Health Services

George Flynn
Director
Environmental Health Services

Dr. John Waters
Director
Communicable Disease Control and
Epidemiology
Public Health Division
Alberta Health

Len Good
Deputy Minister
Environment Canada

Dr. Natalia Krawetz
Chief Executive Officer
Environment Council of Alberta

Mrs. Jean Fraser
Chairman
Health Unit Association of Alberta

Dr. Robert Burns
Executive Director
Alberta Medical Association

Mr. B.M. Burns
Director-General
Canadian Environmental Protection Agency

Invitation to Planning Seminar and Brief Requested

Max McCann
Chairman
Public Health Advisory and Appeal Board

Rob Macintosh
Chairman
Alberta Environmental Network

Ken McCready
Chairman
Round Table on the Environment

Claude S. Brouillard
President
Canadian Petroleum Products Institute

Frank Markson
General Manager
Canadian Chemical Producers' Association

Ian R. Smythe
President
Canadian Petroleum Association

Don Currie
Managing Director
Alberta Chamber of Resources

APPENDIX B

OUTLINE FOR STAKEHOLDER INPUT

DEVELOPMENT OF STRATEGIC OPTIONS FOR ENVIRONMENTAL HEALTH IN ALBERTA

Outline for Stakeholder Input

I. INTRODUCTION

Alberta Health, in conjunction with the public health units of the Province, has retained RMC Resources Management Consultants to conduct a strategic study of environmental health issues and concerns in order to develop strategic options for environmental health in Alberta. Overall study direction is provided by a Steering Committee comprising senior Alberta Health officials and a representative of Alberta Environment. The RMC team includes health care and resource economics consultants, toxicologists, epidemiologists, and an external advisor internationally recognized for contributions to the field of environmental health.

The scope of the consulting project is outlined in the covering letter. The study approach is strategic and requires a wide range of input from key stakeholders. The input will be through interviews, briefs, letters and group meetings.

Your input to this study would make a valuable contribution to the development of public policy in an important area of societal concern.

II. TOPIC AREAS FOR STAKEHOLDER INPUT

The following framework for discussion and input is offered for your consideration. It provides a way for us to coherently gather input from a wide variety of sources without limiting the nature of the comments you may wish to offer.

Please note, we will honour any requests for confidentiality by limiting our reporting to issues only and by avoiding any identification of the source of the comments.

We request that your comments in response to the following questions be made from the perspective of your academic/professional/occupational role in dealing with environmental matters.

Topic Area 1: Identification

- What is your present role or interest in the environmental field?
- How long have you been involved in this field?
- Do you or your organization have a legislative or regulatory mandate in this field?
- What would you consider to be the academic/professional/occupational perspective from which your comments are offered?

Topic Area 2: *Definition of Environmental Health for the Purpose of this Study*

Alberta Health has set out the following definition of environmental health:

> *For the purposes of the study, environmental health refers to those aspects of public health concerned with all the factors, conditions and events in the environment that can impact on human health. Environmental health may be achieved through the promotion of healthy environmental practices and the protection of health through the identification, impact assessment, risk assessment and control of chemical, physical and biological hazards that would adversely affect human health."*
>
> (Request for Proposals, January 12, 1990).

- Please comment on this definition.

- What special implications do you see it having for this study and future policy development?

Topic Area 3: *Strengths of the Present System*

- What do you see as the strengths of the present system of environmental health services in Alberta?

Topic Area 4: *Weaknesses of the Present System*

- What do you see as the weaknesses of the present system of environmental health services in Alberta?

Topic Area 5: *Specific Environmental Health Problems*

- What do you see as the priority environmental health problems to be solved in Alberta?

Topic Area 6: *Emerging Initiatives, Issues and Priority Needs*

- What initiatives are you and/or your organization presently undertaking or planning that in your view may, or should have a bearing on this study and future policy development in environmental health by Alberta Health?

- What do you see as the emerging issues in Alberta in environmental health in the short term (1991 to 1996)? In the longer term (beyond 1996)?

- What are the priority needs you believe must be met in environmental health in Alberta in the next three years?

Topic Area 7: ***Responses Required***

- What are the policy and legislative responses required relative to your comments on emerging initiatives, issues and priority needs on ***Topic Areas 5 & 6*** above?

Topic Area 8: ***Ideal Organization of the System***

- Please describe your vision of the ideal organizational configuration of responsibilities for environmental health in Alberta, in terms of roles, funding and management responsibilities appropriate for each of the key organizational entities in this field. A description of the ideal role foreseen for your organization in relation to the role of Alberta Health and the health units of Alberta would be valuable.

Topic Area 9: ***Constraints***

- What constraints do you believe stand in the way of achieving the policy and legislative responses you have outlined for ***Topic Area 7***, and of achieving the ideal configurations you have outlined for ***Topic Area 8***?

Topic Area 10: ***Opportunities***

- What are the opportunities, in your view, that need to be exploited to achieve the directions you have outlined for ***Topic Areas 7 and 8***?

Topic Area 11: ***Other Observations***

- Please provide any other observations you believe may be of value to the study, e.g., relative to the scope of the study, to current issues in the areas of regulatory and monitoring processes, etc.

Topic Area 12: ***Other Forms of Input***

- We would welcome further input to this study in written form. Would you be willing to submit a letter or brief to the study? If so, we request that your submission be sent by September 6, 1990 to the Edmonton office of RMC addressed to:

Mr. Myroslaw B. Kohut, CMC
Senior Principal and Project Director
RMC Resources Management Consultants Ltd.
Suite 100, 2489 Bloor Street West, Toronto, ON M6S 1R6
FAX: (416) 762-1963 PHONE: (416) 762-8166
or, RMC Edmonton Fax: (403) 482-5591 Phone: (403) 488-2112

Thank you for your interest, input and cooperation.

ANNEX 1

Development of Strategic Options for Environmental Health in Alberta

Scope of the Project

"1. *Identify the high priority health outcomes related to communicable diseases, chronic/non-communicable diseases and wellness that are significantly impacted by environmental factors.*

2. *Identify key stakeholders in the area of environmental health in Alberta.*

3. *Identify and analyze the range of environmental health services provided in Alberta, the structure, driving forces, trends, key success factors and the strategic issues facing the key players, with a particular focus on Alberta Health.*

4. *Examine the nature and strength of the inter-relationships between the Environmental Health Services Branch of Alberta Health and other branches, departments, governments, and external agencies.*

5. *Define those aspects of environmental health services which fall within the jurisdiction of Alberta Health.*

6. *Consult with key stakeholders and a selected focus group of experts to develop and priorize policy options.*

7. *Develop a series of strategic options related to the identified high priority health outcomes, including implications for the management, organization and funding of environmental health services.*

8. *Make specific recommendations regarding the organization and management of environmental health for the province.*

9. *Forecast Alberta Health's future direction, structure, delivery systems, legislation and resources for environmental health.*

10. *Provide cost estimates for recommended options."*

Request for Proposals, January 12, 1990

APPENDIX C

SUMMARY OF WORKSHOP PRESENTATIONS AND DISCUSSION

ENVIRONMENTAL HEALTH
STRATEGIC
PLANNING WORKSHOPS

JULY 25, 1990 - EDMONTON
JULY 26, 1990 - CALGARY

Sponsored by:
Environmental Health Services Branch
Public Health Division
Alberta Health

Edmonton
August 1990

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FOREWORD

On April 25, 1990, the Minister of Health announced a major study of environmental health issues and concerns with a view to developing a strategic plan for the future goals and direction of that program.

Because of the principal responsibility that the health units of Alberta carry in this area, two special one-day workshops were arranged. These were held in Edmonton on July 25, 1990, and in Calgary on July 26, 1990. Workshop facilitators were provided by the firm RMC Resources Management Consultants Ltd.

The purpose of the workshops was to give health units throughout Alberta the opportunity to have input into the environmental health strategic planning process.

This report is essentially a summary of the presentations and discussions which took place during the two workshops. The material generated as a result of the workshops will be taken into account by Alberta Health and by the consultants in the preparation of the environmental health strategic plan report.

WORKSHOP ORGANIZATION AND FORMAT

Prior to the workshops, the health units were invited to submit written briefs on issues and concerns in environmental health. The activities in these workshops were designed to produce recommendations to address the issues raised in these briefs by facilitating intense discussion and analysis. The issues were grouped into four themes and presented to the participants at the beginning of the workshops.

Workshop participants were pre-assigned to one of four breakout groups; each group discussed one of the following four themes:

1. Scope, Functions and Mandates (Theme A)
2. Developing Resources (Theme B)
3. Internal cooperation and Coordination (Theme C)
4. Extra-Sectoral Cooperation (Theme D)

During the morning group sessions, each group reviewed their assigned theme and issues, adding or deleting issues as desired. Then they selected two to four issues that require action on a priority basis, and prepared rationales to explain why the particular issues were selected.

Following the group session, each group presented their priority issues and rationales. These were discussed at the first plenary session, and all participants were invited to ask questions and make suggestions for changes.

In the afternoon group sessions, the same groups reconvened to develop strategies for resolving the priority issues selected earlier, taking into account comments made during the morning plenary session. Some groups chose to revise their priority issues. In addition, each group prepared rationales for their strategies.

During the afternoon plenary session, each group presented the strategies they had developed. All participants were given an opportunity to comment or ask questions.

Prior to leaving the workshop, workshop participants were invited to indicate their degree of approval of the issues and strategies proposed by:

a) placing a green dot to indicate support;
b) placing a yellow dot to indicate ambivalence;
c) placing a red dot to indicate disagreement.

There was considerable participation in this exercise.

KEYNOTE ADDRESS BY DR. SCHAEFER

Dr. Schaefer commented that he was privileged and delighted to attend the workshops since it is a rare occurrence that key stakeholders with different perspectives are brought together to address environmental health as a multi-sectoral topic. He anticipated that the workshops and strategic plan would have far reaching effects beyond the borders of Alberta.

He was impressed that there seems to be a politically supported effort to revitalize environmental health within Alberta. Being actively involved in public health, Dr. Schaefer expressed his deep interest in the outcome, not only of the workshops but of the entire project.

Dr. Schaefer noted the unique occurrence of all three editorials in the August 1990 American Journal of Public Health dealing with environmental health topics.

On a global scale, there exists a great sense of unease about environmental health. The World Health Organization (WHO) is becoming increasingly concerned about the environmental health, impacts of urbanization, particularly in third world cities. WHO has established a high-level commission to determine what is known and what is required in the field of environmental health.

Dr. Schaefer outlined some key symptoms of this sense of unease.

1. Concern about health "having a seat at the table."

2. Questions of the availability and adequacy of resources within health agencies.

3. The sense of "groping for domain." This issue is difficult to address in the face of:

   a) a changing environment;
   b) changing perceptions of the environment;
   c) changing politics.

   Even environmental health personnel are having difficulty defining "environmental health."

4. Seeking a mandate for environmental health.

The problem of lack of resources, underfunding and lack of information makes all of these extremely difficult questions to address, especially in a single agency context. Suc efforts are more difficult through the adverse impacts of:

1. **Specialization**

   Although specialization results in in-depth knowledge of specific issues, it also builds a very strong point of view or emotional attachment to a particular field.

2. **Institutionalization**

   Although institutionalization provides stability, continuity, etc. which motivate us to be productive; it also develops a high degree of identification, and very powerful values. Dr. Schaefer defined this as the "territorial imperative."

In view of these factors, Dr. Schaefer suggested a very systematic approach be taken and that the "realities of the world" be considered. "Ideal" may be desirable, but not realistic.

Dr. Schaefer outlined the system model, previously described in the August 1990 issue of the Environmental Health Standard, to define the mission/concerns of environmental health as a means of determining what should be done and by whom. The model has undergone some changes since then. The boundaries of the "Universe of Health Determinants" and the "Domain of Environmental Health" are now shown as broken lines to indicate permeability. The "Sectoral Zone" distinguishes between economically-oriented and people-oriented organizations. The "Core Element" now includes five components - "Public Health" and "Environmental Protection" plus "Occupational Health and Safety," "Universities and other institutes of higher learning," and "Non-Government Organizations."

THEMES AND ISSUES

A. Scope, Functions and Mandate

The workshops were presented with five issues in this theme drawn from the health units' written submissions.

1. The currency and effectiveness of Public Health legislation.
2. Defining the essential and irreducible functions of Environmental Health.
3. Expanding the existing Environmental Health mandate.
4. Making Environmental Health more effective in health promotion.
5. Defining the essential information and data processing functions of Environmental Health.

These issues, it was suggested, address the process of implementing the interests, activities and authority of Environmental Health. What are the goals and priorities for Environmental Health? A high degree of importance was attached to all the issues, but Issue 1 was given highest priority by both workshops. After that, the Edmonton workshop emphasized information needs while the Calgary workshop chose the need to define the "irreducible minimum." The emphases tended to change through the day. The issue of expanding the mandate, given high priority in itself at first and also by green dots in Calgary, eventually merged into other issues during strategy development.

Many felt that the "irreducible minimum" in environmental health services must be established. Some felt that the existing functions represented the "irreducible minimum," but it was also recognized that there is a need for constant evaluation and redefinition. It was noted that the reduction of services in environmental health has been based on funding cuts, not on goals and objectives.

What should be added to the Environmental Health mandate? Principally, the capability to be pro-active, to practice prevention strategies and health promotion and to move out of the existing crisis management and band-aid modes of trying to resolve problems after the fact. This requires a "place at the table" and a "significant voice" in all planning processes, including involvement in environmental impact assessment, the conducting of baseline studies and in safety concerns. It also entails more emphasis on "health promotion" and "public education and empowerment."

Adequate statutory support is essential. The existing Public Health Act needs to be strengthened with specific reference made to environmental health. The review process must be improved and speeded up to keep the legislation current. The paramountcy clause must be maintained. Should human health protection activities in other departments be consolidated under health? A multi-sectoral approach rather than an exclusive mandate was thought to be more realistic.

The field activities need greater access to expert support. Some felt that this expertise should be located outside of the provincial government organization to reduce the impact of political pressure on the advice given.

B. Developing Resources

Nine issues were drawn from the written submissions.

1. Numbers, skills, and career incentives for public health inspectors.
2. Other human resource needs.
3. Laboratory support services.
4. Information systems and baseline data.
5. In-service training.
6 Scientific capability for health risk assessment.
7. Environmental health public education strategies.
8. Improve and apply planning.
9. Increased funding.

These issues became grouped into more general issues for discussion and priorizing. Overall, the issues of information and human resources were given highest priority. The field staff need access to information and expertise. The public expects the health units to provide good information, and how can the health units "sit at the table" if they have nothing to offer. So information is needed on community health status, especially the development of baseline data, and the surveillance of key environmental health indicators or an index of the quality of environmental health. The need for information also implies greater access to expert support and laboratory services. Lack of this access generates timeline pressures in communicating with the public, the media, other health units, government departments and elsewhere.

The recruitment, retention and career development of environmental health staff left much to be desired. It was felt that the government did not appreciate the health unit needs in this area. Adequate compensation, staff development including distance education, access to information, access to expert support, well-defined provincial goals and standards, and a shared vision were all considered very important to the development of effective human resources in the field. The human resources and expertise in Alberta Health must also be increased.

There is a need to have a "seat at the table" in development planning processes to prevent problems before they occur. The value of adopting a broader view of environmental health was acknowledged, as was the need for inter-agency cooperation or the "multi-sectoral approach." It is important to develop a shared vision through public participation with stakeholders or key players and opinion leaders. It was observed that the roles of Alberta Health and Alberta Environment are not clear. We need to see "there" before we can get "there".

Flexibility in accommodating local conditions and continuous evaluation at all levels are necessary. There was an intense discussion on the public health inspector's struggle to do his job and be politically accepted, with strong opinions on both sides. What politicians think is irrelevant said one, public health is the issue.. It is not morally acceptable to be political, the public health inspector must do what is right. On the other hand, another suggested that if public health inspectors do not consider the political element, then they would not be able to walk the streets in their communities. The concern was raised that lack of funding would limit any effort to address these issues. It was suggested that the sharing of policy development initiatives with other health units would conserve resources.

C. Internal Cooperation and Coordination

Six issues were drawn from the health unit written submissions:

1. Provincial standards versus local autonomy.
2. What functions should be strengthened at both provincial and local levels.
3. Improvements to planning and budget process.
4. Improvements to provincial support for health units.
5. Raising profile of health units and strengthening "political clout".
6. Improvements to information flows between provincial and local levels.

Issues 1, 2 and 5 were given priority at both workshops. Issues evolved and merged through the day. In Edmonton, the issue of information needs became more dominant over the day and garnered the most green dots, but Issues 1 and 2 were also heavily supported. In Calgary, Issues 1, 2, 3 and 5 appeared to receive fairly equal support by comparative dotting, but the need for a higher profile and more "political clout" emerged as being dominant. More political support is needed at all levels.

The conflict between the need for provincial standards and the need for local autonomy to allow flexibility in decision making arose in many ways. It was strongly suggested that the public wants consistency, so there is a concern that too much local autonomy leads to too much variability, perhaps because local boards do not understand environmental health. This means a need for provincial standards and strengthened legislation.

The public health inspector wants the security of strong legislation and clear roles definitions for all players, to ensure the correct application of environmental health principles, and statutory protection from local political pressures.

On the other hand, local boards need the autonomy and flexibility to accommodate the different local conditions and even some political input. There was concern that the quasi-judicial power that the Public Health Advisory and Appeal Board (PHAAB) has to change a local board decision means that the local boards do not really have autonomy. It was then suggested that the appeal process become more judicial with PHAAB assuming only an advisory role, as a means of establishing precedents in a court for the application of environmental health law. It is easy to apply regulations that specify process, but hard to apply those that set outcome or performance standards.

It was suggested that it should be possible to agree on minimum provincial standards and regulations that would leave room for local autonomy and accountability. We already have examples in the existing policy and procedures manual and the regulations.

Issues 4 and 2 became merged during the workshops, especially
in terms of the strengthening of functions within Alberta Health that would in turn support and strengthen functions at the local level. Technical support by department specialists, information sharing capability, leadership, and regulations need to be strengthened at the provincial level. Leadership was expressed in many terms - philosophical, moral, priority setting in the environmental health program, through example by representation at decision-making tables, national liaison and inter-agency coordination.

Increased funding was a given. In Calgary, the issue of planning and budgeting focused on how Environmental Health should be funded and who makes the funding decisions. Concern was expressed that there has been no recognition of the increasing demands and workloads.

At the local level the understanding of provincial regulations and the application of local autonomy needs improvement, as do staff development, public education and the capability to manage a multidisciplinary approach.

D. Extra-Sectoral Cooperation

Five issues were drawn from the health unit written submissions.

1. Inter-agency cooperation and coordination.
2. Increasing the influence of Environmental Health in society.
3. Involvement of the public through information and partnership.
4. More positive influence on politics versus less involvement to protect "arms length" stance.
5. Health risk assessment and environmental impact assessment.

Both workshops identified inter-agency cooperation and improving public involvement as priority issues. Both were heavily supported by green dots.

The need for cooperation and coordination among government agencies, the private sector and non-governmental organizations with interests in environmental health was broadly endorsed. Environmental Health needs ownership of a clear mission statement and should assume a pro-active, meaning leadership, role. The problems of conflicting mandates, duplication of authority and uncertainty of expertise need to be overcome. Environmental Health should be an advocate for determining the real cost (externalities) of developments, especially the cost of health impacts.

More public involvement in the resolution of environmental health issues is desirable. Environmental Health should play the role of "honest broker." The public needs to know that public health inspectors are not politically motivated, since it is perceived that government is generally not to be trusted. However, public health should set the agenda, not the general public. The general public often has unrealistic expectations and questionable commitment to environmental health.

The Calgary workshop also identified health risk assessment capability as a priority in enhancing Public Health's authority and credibility, notwithstanding the acknowledged problems of inadequate science and the unrealistic expectations of the general public and officials.

STRATEGIES AND PRIORITIES

In the afternoon group sessions on strategy development, A set of eight issues appeared to crystallize as priorities from the health unit perspective. These issues crossed themes and groups, with from six to ten distinct references showing up in the charts produced by the eight groups. Wherever reference was made, they drew large numbers of green dots, often in double figures. These issues are grouped into two general themes and named for convenience:

A. Goals and Objectives

1. Shared Vision
2. Leadership
3. Health Promotion

B. Enabling Requirements

4. Legislation
5. Human Resources
6. Information
7. Access to Expertise
8. Funding

The order of these is not intended to convey emphasis or ranking. It is merely a convenience for summarization. "Goals and Objectives" represents what we wish to be or to do or to have. "Enabling Requirements" represents what we feel is necessary to allow us to meet our "Goals and Objectives."

A. Goals and Objectives

1. Shared Vision

The desire for a common understanding of environmental health or "shared vision" was expressed in many ways and on many levels:

- Province-wide goals, shared vision, and standards;
- Adoption of WHO definition of environmental health;
- An expressed need for consistency;
- Support for the "multi-sectoral approach;"
- A wish for consensus;
- A concern that other players do not adequately understand environmental health;
- An expressed need for internal cooperation within public health as a whole.

Two strategies emerged, the first being essentially a prerequisite for the second.

(a) To inform other players about environmental health by:

- placing environmental health on all agendas;
- gaining a "seat at the table," especially in land-use planning and the approval process for industrial developments;
- maintaining the focus on human health outcomes;
- providing information resources to the general public; and
- upgrading the health unit local boards' understanding of environmental health.

(b) To achieve consensus or consistency:

- in local board decisions, by legislating standardized expectations and outcomes, and by examining reporting relationships;
- between the environmental health programs of the various health units, by increasing the frequency of the program managers' meetings, and by lateral sharing of local policies and policy development;
- between the health units and Alberta Health, by increasing the number of site visits by department specialists , and ensuring that they have a practical understanding of field operations;
- within public health as a whole, by fostering internal cooperation with all health professionals, and encouraging more involvement by HUAA and the AMA;
- with other agencies and organizations, by identifying and involving all the stakeholders, and by promoting the "multi-sectoral approach;"
- by requiring consensus decision making, by legislation if necessary; (It was pointed out, however, that a "shared vision" cannot be legislated.)
- within the province, by establishing a "Premier's Council on Environmental Health;" (This suggestion received eleven red dots. Nothing else achieved anything close to this level of rejection.);
- with the general public, by assisting the public to become involved and to have input, by liaising with interest groups, by accommodating local needs and variations, and by consulting with all stakeholders;
- with federal agencies, by promoting liaison; and
- by requiring on-going evaluation at every level.

2. *Leadership*

There was a strongly expressed need for both the health units and Alberta Health to exercise leadership in environmental health. This was very much related to increasing Environmental Health's influence and "political clout." The leadership desired by the health units for themselves was a strong practical voice in decision making, whereas that expected of Alberta Health was more philosophical and in support of the health units.

The "dotting" exercise may, perhaps, reflect some anxiety about the question of leadership. for example, while the principle of a greater public involvement in environmental health received enthusiastic green dot support, the strategies proposed received much less. Perhaps this related to the implicit dilution of Environmental Health's authority, which they entailed. Also, there was frequent expression of a need for legislated buttressing of the desired lead role.

The strategies for establishing leadership were directed at two levels.

(a) At the health unit level by:

- being advocates for environmental health;
- establishing an effective presence "at the table;"
- depoliticizing environmental health issues;
- acting as "honest brokers" or arbiters;
- becoming "single windows" for health issues; and
- building bridges and supporting initiatives in all elements of society that promote environmental health.

(b) In Alberta Health by:

- leading via vision, mission, values and goals;
- providing philosophical support;
- stronger advocacy for environmental health from the Minister of Health; and
- assuming a coordinating role in province-wide issues that require health unit field activity, supporting the health units, and protecting them from intrusive initiatives by other agencies.

3. *Health Promotion*

Health promotion was emphasized as an issue in itself by four groups and touched on by several others. It is the rationale that underlies the issues of "Shared Vision" and "Leadership," this summary will focus on specific references to "health promotion". Health promotion was defined as a preventative strategy for environmental health. It provides a means to educate and empower the general public to take responsibility for its own health individually and collectively. It also has the potential, by conveying correct information, of reducing the number of trivial, unreasonable and inappropriate complaints. Effective health promotion depends on a capability to do health risk assessments to ensure that it is appropriately directed. Without the capability to do health risk assessments and to measure health outcomes, the results of health promotion are virtually invisible, which makes it difficult to justify funding. Two general strategic initiatives emerged.

(a) Establish a health promotion thrust throughout Alberta Health by:

- acquiring the information base and expertise to conduct health risk assessments;
- demonstrating health promotion to be a means of reducing direct health care costs;
- demonstrating health promotion to be a valuable support to industries such as tourism where high standards of hygiene can be an important marketing factor; and
- making health promotion part of the "irreducible minimum" service required of Environmental Health.

(b) Adopt the following health promotion initiatives in the health units:

- establish a library and resources on environmental health for the public in each health unit;
- request Alberta Health to supply health promotion materials and publications;
- roster community awareness through newsletters and inter-agency round tables; and
- coopt public scrutiny in maintaining environmental health standards.

B. Enabling Requirements

4. Legislation

Six of the eight groups placed heavy emphasis on the need for revising, rewriting or strengthening Alberta's public health legislation and the other two groups also touched on it. Two strategies emerged, the first addressing process and the second proposing specific legislative requirements.

(a) Improve and speed-up the legislative review and revision process by:

- scheduling periodic review every two to five years; and
- developing a knowledge base for standards development and support.

(b) Adopt legislative amendments to:

- make explicit mention of environmental health in the Public Health Act;
- provide a basis for health protection;
- require a lead role for Environmental Health;
- establish conflict of interest standards for local board members;
- make the Public Health Act "binding on the Crown;"
- provide a "freedom of information" clause;
- establish province-wide standards for uniformity;
- establish minimum outcome standards;
- provide more flexibility in regulations;
- require inter-agency coordination;
- require consensus decision making;
- provide alternative mechanisms for issue resolution;
- clarify enabling and regulatory requirements;
- broaden scope; and
- provide a definition on environmental health.

It was firmly reiterated that local autonomy must be preserved and that the paramountcy clause in the Public Health Act must be retained. There was a suggestion made to separate the judicial and advisory functions of the Public Health Advisory and Appeal Board, but this suggestion received only three dots and they were all yellow indicating little interest and no support.

5. *Human Resources*

There was great concern expressed about the recruitment and retention of adequately skilled public health inspectors. The issue was discussed in detail only by the two groups which discussed "Theme B," but it drew comment in the plenary sessions and lots of green dots. The discussions showed a very heavy emphasis on education and training initiatives, but three distinct strategies emerged.

(a) Conduct needs assessments by regular audits of mandated services to determine manpower requirements.

(b) Enhance the appeal and status of public health inspection as a career by:

- recognition as a skilled profession;
- improved training based on widely accepted standards for basic education;
- well-defined and legislated role, responsibility and authority;
- opportunities for further education, including paid educational leave, sabbaticals, and a range of distance education; and
- upgrading office accommodation in health units.

(c) Target recruitment of students from rural areas to improve retention in rural health units.

6. *Information*

This issue received emphasis in five groups. Databases on environmental indicators, health effects (especially long-term), and socio-economic factors, together with the capability to do analysis and to model prevention strategies, are essential to the tasks of health risk assessment and the appropriate application of resources. Information systems must allow for data collection, analysis, assessment, and interpretation by both the health units and Alberta Health, and satisfy the needs of both. The strategy is, therefore:

(a) To develop an information system to support Environmental Health by:

- investigating what we need and what we have;
- preparing an "Information Technical Strategic Plan;"
- requiring expert design of information systems;
- gaining access to databases in other agencies;
- developing baseline data; and
- establishing a provincial coordinating body to oversee the use of the system for research purposes.

7. *Access to Expertise*

This issue received a great deal of emphasis in six of the eight groups. Strategies were targeted at four general sources of expertise, namely, Alberta Health, independent sources, laboratory services and peers, with the intent for the health units to have access to appropriate expertise when needed.

(a) Alberta Health should enhance its centralized expertise by:

- increasing the number of specialists employed to advise the health units with emphasis on the interpretation of legislation, toxicology and epidemiology;
- ensuring that its specialists have practical experience in the field;
- requiring the specialists to visit the field regularly; and
- establishing a central inventory of expertise resources, including the existing talent throughout government that is not effectively accessed now.

(b) Establish effective liaison with credible independent sources of expertise by:

- establishing a foundation to fund a pool of expertise, whose role would be advisory, instructive, and consultative;
- attaching the foundation to a University or institute;
- including more than one authority in the pool of expertise for any given discipline; and
- access to legal counsel.

(It was observed that it may become difficult for health units to engage outside consultants, who might be reluctant to take a politically unpopular stand lest it jeopardize future government and business contracts).

(c) Expand, enhance and centralize laboratory services.

(d) Improve communication among environmental health professionals in the health units by:

- more frequent program managers' meetings; and
- lateral sharing of local policy and program development to avoid duplication and enhance consistency.

8. *Funding*

Funding was emphasized in five groups and touched on in two others. It was observed that, to undertake any of the strategies, funding is implicit. It was also observed that the reduction of services in environmental health has been based on finances and not on goals and objectives. More funding is necessary to enable the essential growth of functions to occur at both the provincial and local levels. Funding was specifically requested for information system development. The current budget process was described as subjective and secretive, and improvement was considered imperative. Strategy suggestions all focused on developing the rationale to support additional funding, so the strategy may be stated as:

(a) Generate a rationale to support requests for funding of environmental health programs and improve planning and budgeting by:

- establishing a method to monitor the effectiveness of environmental health programs;
- using health risk assessments as a foundation to priorize programs and to allocate budget and manpower;
- developing a funding formula with built-in recognition of workload demand;
- reviewing past manpower utilization studies; and
- recognizing the cost benefits of

    1) less spent on after-the-fact problem solving,
    2) enhancing the tourist industry,
    3) reducing direct health care costs, and
    4) the economic efficiencies of utilizing locally - based field staff for government programs.

CONCLUDING REMARKS BY DR. SCHAEFER

Dr. Schaefer commenced by stating that the Edmonton and Calgary workshops had proved to be a fascinating two days.

Dr. Schaefer emphasized that it is necessary to improve and strengthen the environmental health system as it is presently dimensioned. Then one can look towards expanding the program to what it should encompass. Regarding extra-sectoral cooperation,
Dr. Schaefer stressed that, before taking a "seat at the table," Public Health needs to be strengthened.

The key themes of the workshops were encapsulated:

1. Information.
2. Integration and coordination (harmony of specialists).
3. Strengthening expertise and improving access to it.
4. Increased information sharing between health units.
5. Early involvement in decision-making processes.
6. Public education about environmental health and strengthening credibility. "Opening up the Game" (getting more people involved and interested in what we're doing).
7. Pro-active role very important. Environmental Health needs to move forward and be seen as the lead agency.
8. Setting goals and objectives.

Dr. Schaefer commented that he felt privileged to attend the workshops because no other jurisdiction has, at this very crucial time, come together with the political will to tackle environmental health issues. He stressed that it is very important for Alberta to succeed in defining and implementing the strategic option(s) chosen. This, of course, is not a simple process; it involves many tensions. These tensions are not "either/or". Rather, a balance point must be found. He outlined these tensions:

1. Between the jurisdictional mandate and the implicit mandate (what we would like to do).
2. Between integration and autonomy and the implicit mandate.
3. Between formal authority and informal authority (advocacy).
4. Between safeguarding what you have now and changing it in the future.
5. Between our values as Albertans and those of the health units and of Alberta Health.
6. Between being rational and comprehensive and being realistic.

All of these issues are difficult but very important.

Dr. Schaefer emphasized two points:

1. Trust - it is important to build up credibility and contacts.
2. Always start with what you have now and make changes by moving in feasible steps.

Fifteen to eighteen years ago, an inadvertent error was made regarding the definition of "environmental health" and the need for that term instead of "environmental sanitation." We know it refers to human health. Others perceive it as meaning the health of the environment. Today, we attach the term to organizations doing environmental sanitation. Consequently, there is ambiguity with the term itself. This needs to be addressed.

Dr. Schaefer commented that "the perfect is the enemy of the better." Trying to formulate the perfect system for environmental health in Alberta may be the biggest obstacle to achieving a better system in the foreseeable future.

Dr. Schaefer concluded by stating that his expectations were fulfilled, the strategic plan in Alberta is very healthy. He hopes that it is successful, in view of his emotional attachment to the project and its outcome. Being privileged to observe what is taking place on a global scale, he could say that what is happening in Alberta is rare. An environmental health system which links human health to a healthy environment would be very promising. He felt very privileged to participate in the workshops, because what has been discussed internationally for years may come to be demonstrated here in Alberta.

APPENDIX D

STRATEGIC PLANNING SEMINAR TOPICS AND RECORD OF DISCUSSION OF FIRST SEMINAR

RMC

STUDY OF STRATEGIC OPTIONS FOR ENVIRONMENTAL HEALTH IN ALBERTA

STRATEGIC PLANNING SEMINAR I: THE CURRENT STATE

Session Topics

Opening Remarks

The seminar chairman, **Dr. Ken Hodgins**, Assistant Deputy Minister, Public Health, and Chairman of the Steering Committee for the study, will open the seminar and review procedures for the day. **Mr. George Flynn**, Director of the Environmental Health Services Branch, and Manager for the study, will outline the study objectives, methods and progress.

Session I ***The Context from a Health Perspective:***

- ***Developments in Environmental Health on the International Scene.***
- ***Mandates and Linkages for Environmental Health in Alberta.***

Synopsis Initiatives, trends and issues in environmental health in the province are best understood in the context of two global issues, "health for all" and "sustainable development". The former arises out of the 1977 Alma-Ata declaration and adoption of the goal "Health for All by the Year 2000" by the World Health Assembly of the World Health Organization (WHO). The latter is a fundamental perspective of the 1987 report of the World Commission on Environment and Development (the Brundtland Commission). Both reports have generated significant responses internationally in environmental health, which are reflected in national and provincial activities.

Dr. Morris Schaefer will outline key developments on the international scene.

The Mandate of Alberta Health in environmental health matters is principally based on the Public Health Act, which among other provisions, includes a section on paramountcy:

> "This Act prevails over any enactment with which it conflicts, other than the Alberta Bill of Rights, and a regulation under this Act prevails over any other bylaw, rule, order or regulation with which it conflicts" (s.83)

SEMINAR I
(continued)

While the responsibility for this act rests with the Minister of Health, and hence Alberta Health through its Environmental Health Services Branch, administration or the Act is largely delegated to local boards of health throughout the province, which are vested with considerable autonomy. Each local board of health has a staff of public health inspectors who are delegated powers of inspection under the Act, including the laying of charges for non-compliance with its provisions and regulations.

Mr. Myroslaw Kohut will describe the present structure for the delivery of environmental health services in Alberta and the linkages between Alberta Health, other departments, and Health and Welfare Canada.

Session II ***An Assessment of the Alberta Scene:***

- ***Successes, Problems and Issues***

Synopsis The study team has conducted extensive consultations with a wide range of stakeholders who were identified by Alberta Health jointly with the consultants. The consultations included interviews, review of briefs submitted to the study, and presentation of two workshops to representatives of all local boards of health.

A review of this input and an assessment of the current Alberta scene will be presented by **Mr. Myroslaw Kohut**, with the support of **Mr. Gordon Rozon, Ms. Antoinette Alleyne and Ms. Barbara Voigt.**

Session III ***Establishing Priorities:***

- ***Determination of Health Risks***
- ***Health Outcomes Significantly Affected by Environmental Factors***

Synopsis Degradation of the environment we live in and the exposure of populations to a wide array of physical, biological and toxicological contaminants and agents present hazards to human health. The process of assembling and weighing evidence, then making choices either to eliminate the risk to human health, or to accept varying degrees of risk in exchange for varying degrees of benefit, is fundamental to the health disciplines.

SEMINAR I
(continued)

Dr. Graham Gibbs and **Dr. Robert Steele** will present a discussion on determining health risks and developing strategies to manage them. They will also identify high priority health outcomes significantly affected by environmental factors in Alberta.

Session III *A Bridge to the Future:*

- *A Conceptual Framework for Environmental Health*
- *Emerging Directions for Further Consideration*

Synopsis The consulting team will outline concepts and recommendations being considered on a preliminary basis for detailed discussion at the second of these two strategic planning seminars, on October 4, 1990.

Dr. Morris Schaefer will discuss Contemporary Environmental Health in terms of a conceptual model he has developed (the spherical model). **Mr. Kohut**, with the support of the other consulting team members, will present some of the key concepts and recommendations under consideration by the study. Response to the emerging directions presented will be sought from the participants.

Included in the discussion will be preliminary directions on:

- legal, structural, and process mechanisms to ensure interdepartmental coordination and effective lead agency response in circumstances where there appears to be significant risk to human health;
- the introduction of assessment of potential impacts on human health into EIAs;
- development of specialized, technical human resources; and
- information system coordination and development.

The study team anticipates the participants will also identify additional directions the study team should consider.

Open Forum and Seminar Closure

The seminar chairman, **Dr. Ken Hodgins**, will open the meeting to comments and observations on any item concerning this or the following seminar on October 4, 1990. Summary and closing remarks by **Dr. Morris Schaefer** and the RMC consulting team will follow.

STUDY OF STRATEGIC OPTIONS FOR ENVIRONMENTAL HEALTH IN ALBERTA

STRATEGIC PLANNING SEMINAR II: THE FUTURE STATE

Session Topics

Opening Remarks

The seminar chairman, **Dr. Ken Hodgins**, Assistant Deputy Minister, Public Health, and Chairman of the Steering Committee for the study, will open the seminar and review procedures for the day. **Mr. George Flynn**, Director of the Environmental Health Services Branch, and Manager for the study, will outline the seminar objectives and process.

Session I ***Cooperation for Environmental Health: Clarifying Our Concepts***

- ***Definitions, Government and Health Unit Functions.***
- ***The "Minus Option" - The Successes of Public Health Enables It to Withdraw from Environmental Health.***

Synopsis How is environmental health to be defined for the future state? What are the functions of government departments as compared to the functions of the Health Units? Have the underlying rationale and efforts of Public Health become so well institutionalized that much of what is presently done by government and its agencies would permit Alberta Health to withdraw from environmental health?

The quest for a suitable definition of environmental health, and a delineation of stakeholder roles were key concerns arising from the first seminar. Dr. Ernie Chang encouraged the consulting team to be courageous in its choice of strategic options.

This session will start with a brief presentation by **Dr. Morris Schaefer** on definitions of environmental health and health authority functions. Participants will be invited to discuss and debate the concepts presented, and whether Alberta Health can indeed consider withdrawing from the arena of environmental health.

SEMINAR II
(continued)

Session II ***The Minimal Option: Oiling and Balancing the Wheels***

Synopsis

Assuming a future role exists for Alberta Health in the arena of environmental health, what is "Minimal Option", that is, what are the essential roles, responsibilities and resources required to overcome existing limitations and to meet future needs, if present and emerging service problems are to be effectively managed.

This session will start with a brief outline of the "Minimal Option" under development by the consulting team, presented by **Mr. Myroslaw Kohut**. Participants will then be invited to discuss and debate the elements of this option, adding, modifying or subtracting elements, as the case may be. Participants will also be asked to focus on potential impacts on their respective departments that may arise from the adoption of elements under discussion.

Session III ***Wider Options: A Matter of Phasing? A Matter of Necessity?***

Synopsis

The "Minimal Option" is likely to be flexible, expandable to wider options in an incremental, modular manner. What are the viable extensions of the minimum model that would enhance the leadership role of Alberta in environmental health matters, and could be considered for future, phased implementation? If cooperation and intersectoral cooperation cannot be secured through coordinating measures, what new authority structures could be developed to accomplish these ends?

Mr. Myroslaw Kohut and **Dr. Morris Schaefer** will extend the discussion of Session II to present a number of wider options as a basis for discussion.

Session IV ***Special Problems:***

- ***Health in Environmental Impact Assessment***
- ***Standardization vs Autonomy***
- ***Promoting Private and Citizenship Action***

SEMINAR II
(continued)

Synopsis

The issue of health in environmental impact assessment is of major interest to organizations with key roles in the delivery of environmental health services, for example, the Health Unit Association of Alberta. The roles, and the responsibility and accountability relationships linking Health Units and the Environmental Health Services Branch of Alberta Health are fundamental to the specification of the future state.

Quite apart from these organizational interests, many individual Albertans also are interested in the role of health in EIAs. Existing and emerging private interests and citizen action can ultimately shape the characteristics of future delivery of environmental health services and their organization.

Can and should health matters be incorporated into EIAs? Under what conditions? Who will pay? Who will receive and decide on the recommendation of health impact studies?

Regarding Alberta Health and the Health Units: What are the needs? What are the respective desired roles? What is the relationship between benefits and costs of maintaining present patterns of autonomy?

Regarding private and citizen action: What can be done to promote environmental practices that contribute positively to human health and minimize hazards to human health? What are the desired roles for private individuals and citizen action in the future? How can people be empowered to set an agenda that adds health to Sustainable Development to construct, as described by Dr. Sherman Weaver, the three legged stool of a sustainable environment, a sustainable economy, and sustainable health?

Open Forum and Seminar Closure

The seminar chairman, **Dr. Ken Hodgins**, will open the the meeting to comments and observations on any item relevant to the seminars and the study. Summary and closing remarks by **Dr. Morris Schaefer** and the RMC consulting team will follow.

ENVIRONMENTAL HEALTH

STRATEGIC PLANNING SEMINAR I:

THE CURRENT STATE

RECORD OF DISCUSSION

SEPTEMBER 13, 1990 EDMONTON

Sponsored by:
Environmental Health Services Branch
Public Health Division
Alberta Health

Edmonton
October 1990

OPENING REMARKS

Dr. K.W. Hodgins, Assistant Deputy Minister, Public Health Division, Alberta Health welcomed the participants and stressed the importance that the Minister of Health places on developing a strategic plan for Environmental Health.

George Flynn, Director, Environmental Health Services described the seminar process as building on the extensive written and verbal consultations held with about 90 key stakeholders both in Alberta and throughout the rest of Canada. The purpose of this process is to produce an effective partnership to address environmental health issues in Alberta, and to assure the Minister of Health that as wide a consensus as possible has been reached.

SESSION I - THE CONTEXT FROM A HEALTH PERSPECTIVE

A. Developments in Environmental Health on the International Scene

Dr. Morris Schaefer, Professor Emeritus of Health Policy and Administration, University of North Carolina, spoke of his continuing pleasure in visiting Alberta and participating in this revitalization of the role of "Health" in environmental health issues. This strategic planning initiative reflects global trends.

Public Health once passive and quiescent, following its early success against communicable disease, is now moving out of its state of inertia in response to the global sense of unease, which has been fostered by a growing recognition of the seriousness of environmental health problems arising from urbanization and population growth. Considerable reflection in many WHO commissions has led to an adaptive set of concepts and doctrines, which now, perhaps, may be turned into operational reality in Alberta.

We face many distractions to progress (1) in the preconception of health care as meaning the investment of enormous resources to fix the failures of human interaction with the environment; (2) in sectoral rigidities; (3) in aggression on domains; (4) in institutionalized and categorical programs; and (5) in doctrinal rigidity, meaning too much attachment to the past and the reluctance to proceed beyond simple speculation and get on with what needs to be done. There is a sense of having lost ground and, therefore, of having ground to make up.

The conceptual basis now in place provides an opportunity for the necessary "doctrinal revolution" to achieve revitalization. We need to consider primary health care (health promotion and protection) as a catalyst, leader, provoker and advocate of changes in priorities and of new approaches to intersectoral cooperation to mobilize the total health promotion capacity of a community and to point the way to individual and collective self-reliance in achieving health for all.

There are two major conceptual markers. First, the 1978 WHO "Health for All Strategy" leading to the 1984 Primary Health Care Declaration of Alma Ata with its special focus in health promotion. Second, the 1987 Brundtland Report entitled "Our Common Future." The concept of "sustainable development" has taken root in many organizations, not the least the World Bank, which funded the highway opening the Amazon basin to development, and which now funds no project without first doing an Environmental Impact Assessment. "Sustainable development" concerns population, urbanization, food supply, energy, industry, economics, species survival, and ecosystem and health protection. These powerful doctrines need to be given use and meaning in the local setting (in our case - Alberta) through the building and development of new operational systems.

Worldwide the situation is pretty desperate. Fortunately, Canada is right at the top in having the capability to address environmental health. Of 168 countries surveyed by WHO, only 25% had adequate capability, 50% had some, 25% had none. Capability is not, however, a measure of how well a country does. Eastern Europe has the capability, but it is an ecological disaster area. 8 out of 10 people in the world live in countries with substantially less environmental health protection than in Canada. A more recent survey of 67 countries suggests that the level of capability may be declining, especially in manpower and at the local level.

Capability correlates with wealth but, whether or not health agencies are actually involved in environmental health programs is not related to wealth. The level of involvement was assessed by WHO in 1984 and 1989 on a scale of 0 (representing no involvement) through 1 (negligible) and 2 (limited) to 3 (adequate). The average in both surveys was 1.63, meaning somewhere between negligible and limited and a long way from adequate.

New WHO initiatives include a high level commission to investigate environmental health needs and the Third International Conference on Health Promotion in Sustainable Societies in 1991.

B. Mandates and Linkages for Environmental Health in Alberta

Myroslaw Kohut, RMC Resources Management Consultants Ltd., outlined the existing mandates and linkages for environmental health programs in Alberta, beginning with the constitutional division of powers and responsibilities.

The Constitution Act, 1867 (formerly named the British North America Act, 1867) establishes health care as a provincial responsibility. However, the Minister of National Health and Welfare has been given a role in health promotion, research, information distribution, and cooperation with provincial agencies, as well as in the criminal law provisions concerning food and drugs. This is implemented through the Health Protection Branch, the Environmental Health Directorate, interdepartmental memoranda of understanding, and about 30 committees including the Federal/Provincial Advisory Committee on Environmental and Occupational Health.

In Alberta, the Public Health Act, 1985 and regulations provide the basis for provincial environmental health programs. These are administered by the health units with the Environmental Health Services branch providing support. It is however, a complex multi-linked area involving many branches, departments and agencies with which Environmental Health Services attempts to maintain liaison despite few human resources. It is dependent on support from the various laboratory services maintained by the Provincial Laboratory of Public Health, Alberta Environment and Alberta Agriculture and also on expertise from various sources, for example, from Alberta Environment in the evaluation of landfill applications.

Mr. Kohut highlighted certain facets of the legislation, including the paramountcy clause in the Public Health Act, the Waiver Regulation, and the process for appealing local board decisions to the Public Health Advisory and Appeal Board.

Relevant Alberta Health corporate priorities are (1) responses to the Rainbow and Watanabe Reports, (2) this strategic planning initiative, and (3) a review of laboratory services.

C. Participant Responses and Discussion

Roy Hickman, Director-General, Environmental Health Directorate, Health and Welfare Canada, opened the discussion by describing the federal scene.

Environment Canada has not been given responsibility for human health risk assessment as has the U.S. Environmental Protection Agency. That responsibility has remained with Health and Welfare Canada. However, the human resources taken to form Environment Canada in 1971 left Health and Welfare Canada below the critical mass.

The 1974 Lalonde Report's vision for a health protection emphasis in environmental issues, together with the powers given to the Minister of National Health and Welfare in the Environmental Contaminants Act, 1976 and the Canadian Environmental Protection Act, 1988, provided a basis for increasing resources, although not, perhaps, as much as one would like.

Health and Welfare Canada's role is now seen as a national resource for research and standard setting complementing the roles of the provinces. Except in the special cases of the Medical Services Directorate and Food and Drug Inspection, it has not developed a regionalized organization as has Environment Canada. Medical Services has an operational role in areas under federal jurisdiction, including the Territories and reserves, which is coordinated with the Health Protection Branch.

The Health Protection Branch has a staff of 250 of whom roughly 40% are devoted to research, 40% to the evaluation and setting of standards and guidelines, and 20% to the implementation of legislation. Through the medium of the Federal/Provincial Advisory Committee on Occupational and Environmental Health, resources from across the nation are brought together to establish national guidelines.

We are entering an interesting period with the issuing of the Green Plan. The Cabinet Committee on Planning and Priorities will be looking at putting new resources into environmental protection. Canadians are certainly concerned about the environment in a general sense, but they are especially concerned about the impact on health - "what is it doing to me?"

Dr. Rod Crutcher, Canadian Petroleum Association, expressed his enjoyment of Dr. Schaefer's presentation. He stated that industry is bemused by the emphasis that government places on high-tech medical care. Industry would prefer more emphasis on prevention and protection. The problem is that we all have a different idea of what "environmental health" means. We are dealing with a skeleton, and we have to put flesh and blood on it.

The petroleum industry has spent $300 million in the past 20 years on environmental research in Alberta. Industry has developed many linkages. It is used to working cooperatively with various groups in government and universities, for example, the Acid Deposition Research Project and sour gas research. Alberta is a world leader in hydrogen sulphide toxicity research, but more work needs to be done and more money is needed to continue it. We need pro-active research in the context of sustainable development to advance science and knowledge in occupational and environmental medicine.

Max McCann, Chairman, Public Health Advisory and Appeal Board, gave an overview of PHAAB and described its two-fold purpose to advise the Minister of Health on health related issues and to provide an appeal process to protect those individuals who feel that they have been adversely affected by a local board decision. Two prominent issues are intensive livestock operations and waste management landfills.

Sue Arrison, representing the non-governmental environmental perspective, found it very encouraging that Alberta Health was now taking a leadership role. There is a lot of public frustration that Alberta Health has not taken leadership and not responded on environmental issues. Alberta Health should be more involved. There is a need for more research to provide a source of unbiased, high quality, and credible scientific information that people can trust.

Dr. John Waters, Alberta Health, suggested that Alberta Health is really the Department of Sickness. Only 10% of the budget is spent to prevent illness and promote health. Dr. Waters also suggested that the Minister of Health is somewhat handicapped in that the Public Health Act gives the Minister no responsibility, authority or duty to health protection and promotion, except in the very specific and traditional public health programs. This precipitated a discussion on the interpretation of the Act, which did not resolve the question.

Shaun Hammond, Alberta Public Safety Services, expressed concern about the lack of distinction between "environmental health" and "public health". He noted that resources in a number of departments including his own were engaged in environmental health activities, so that considering only Alberta Health's budget severely underestimates the provincial resources actually applied in this area.

Muriel Abdurahman, Vice Chairman, PHAAB, agreed that many concerns overlap jurisdictions. Environmental Health's mandate is broad, but it is limited by resources, so there is some confusion in the public's mind as to who should be doing what.

Gordon Rozon, RMC, summarized the presentations and discussion to wrap up Session I. He observed that Dr. Schaefer's presentation left us with the sense that this initiative in Alberta is important and ground breaking. He high-lighted the observations about improving linkages, the interaction of the public with Environmental Health, the need for leadership by Alberta Health, and the confusion about definitions and mandates.

SESSION II - AN ASSESSMENT OF THE ALBERTA SCENE

A. Successes, Problems and Issues

Mr. Kohut presented the flavour of the written and verbal comments received in response to the wide solicitation of key Alberta stakeholders. He said that it would be unproductive to dwell on such historical factors as the loss of mandate and loss of functions to other agencies, past jurisdictional and, perhaps, personality conflicts, the shifting of the Public Health Division through several different departments, and the high turnover of senior departmental staff breaking down continuity and effective advocacy for the environmental health program.

Successes include the decentralized program delivery through the health units, the flawed but workable regulations, the technical support provided to health units despite limited resources, and the development of information systems which have given Alberta an acknowledged lead.

Problems reflect the fragmentation of mandate, confusion over direction, scientific uncertainties, need for a definition of the problem, choice of strategies, human resources, funding, and public perceptions that paint Alberta Environment as the partner of polluters and look trustingly to Health for support. The public is concerned about the degradation of the environment both in a global sense and in specific local circumstances.

The health unit perception of these problems is expressed in the two summary report of the environmental health strategic planning workshops.

B. Participant Responses and Discussion

Jean Fraser, Chairman, Health Unit Association of Alberta observed that it was hard to know where to begin, but suggested first that the health units did not express the adverse opinion about Alberta Environment noted in the consultants' presentation. Mr. Kohut admitted that it was not. Mrs. Fraser felt that Alberta Agriculture was more deserving of odium than Alberta Environment. Dr. Church disagreed. Dr. Hodgins pointed out that the federal government would soon resolve the issue of universal milk pasteurization. Mrs. Fraser noted that the World Bank has an environmental screening process for all commercial developments, and recommended its adoption in Alberta.

Dr. Terry Church, Alberta Agriculture, recognized the merit of this broad-ranging consultative process. He was very aggrieved that Alberta Agriculture should be identified right down there with Alberta Environment, especially since his department is a major player in health protection with 90 man years and $ 5.5 million devoted to it. The agriculture community is as concerned as everybody else about the impact of environmental pollution.

The safety of foods is increasingly important. Alberta Agriculture rejects the accusation that it is concerned solely with production. It clearly understands the need for a safe, wholesome product and not only for the purely selfish reason of protecting the market. Safety now dominates both economics and productivity. The question is which of two approaches to use, namely health hazard and risk management or regulatory control.

Mel Miller, Alberta Agriculture, stated that extra-sectoral cooperation is very important to Alberta Agriculture; in establishing intensive livestock operations, for example. Such cooperation must, however, respect the role and mandate of Alberta Agriculture. The department is actively seeking ways to mitigate problems and there are opportunities for more interdepartmental cooperation and less worrying about "turf" or "domain".

Mr. Kohut observed that high quality-food is an important marker in tourism development, especially when appealing to certain wealthy and fastidious market segments.

Muriel Abdurahman spoke of the recent PHAAB inquiry into intensive livestock operations. It became clear during the hearing, that a lack of cooperation and trust is a major problem. Agriculture it seems has the sense of being stuck with higher standards of environmental protection than is other industry.

There are competing forces within the agricultural community that transcend the simplification of issues to "Health versus Agriculture".. Whereas it is true, for example, that a large component of the professional staff of Alberta Agriculture supports universal milk pasteurization, this viewpoint is not supported at the "grass roots" or by the Agricultural Caucus. Again, during the recent PHAAB inquiry, it became apparent that the conflict over intensive livestock operations was not an urban-rural issue. It is in fact primarily a conflict within the agricultural community between neighbouring farmers - grain farmers versus intensive livestock farmers.

Mrs. Abdurahman spoke of the industry-community cooperation in Fort Saskatchewan as a model for all to follow.

Mr. Kohut reminded us that Alberta Environment should be applauded for the proposed omnibus Alberta Environmental Protection and Enhancement Legislation, which may prove to be the toughest in Canada.

Dr. Sherman Weaver, Alberta Environmental Centre, gave the analogy of a three-legged stool, with the legs representing (1) the health of people, (2) the health of the environment and (3) the health of the economy. Environment is the key to everything, but then so are the other two. Environment like capital must be protected. A healthy economy is necessary to support the implementation of health protection programs.

Until three years ago, Alberta Environment's mandate was to balance economic development and environmental protection. Now the mandate is simply to protect the environment.

The Alberta Environmental Centre developed out of a need to centralize various services. It provides a multidisciplinary approach to environmental research. Among other things, it inherited the chore of routine water analysis. The question is whether this is the most efficient way to provide this service? Perhaps a combination of locally-based laboratory support with central back-up for research may be better than total centralization for routine analysis.

Roy Hickman, responding to Jean Fraser, agreed that there is increasing emphasis on environmental impact assessment and on health impact assessment. The Green Plan workshops raised the question of who is to be the advocate for health? Who will provide the scientific expertise at hearings, speak on health issues, and present health information? We need "science aid" like "legal aid", because the government being bound by the principle of Cabinet solidarity cannot be the advocate.

Dr. Schaefer drew attention to the workshop suggestions that the health unit system in Alberta is now and should continue to be the advocate for health.

Dr. Ernie Chang, Alberta Research Council, proposed a model of orthogonal linkages across broad levels of human endeavour. Perhaps by looking at different ways to create linkages, we can find the way of working together to see us through to the 21st century.

Jack Thomas, Assistant Deputy Minister, Alberta Municipal Affairs, said that the planning community, both at the regional and urban levels, had frequent and important linkages with Environmental Health. The lack of public trust in the politics of resource development has led to the problem of many an industrial proposal making its way through the provincial regulatory processes only to find that another round of public hearings is necessary to get final development authority and rezoning from the municipality. Then, opponents come out of the woodwork and intimidate local councils into denying approval.

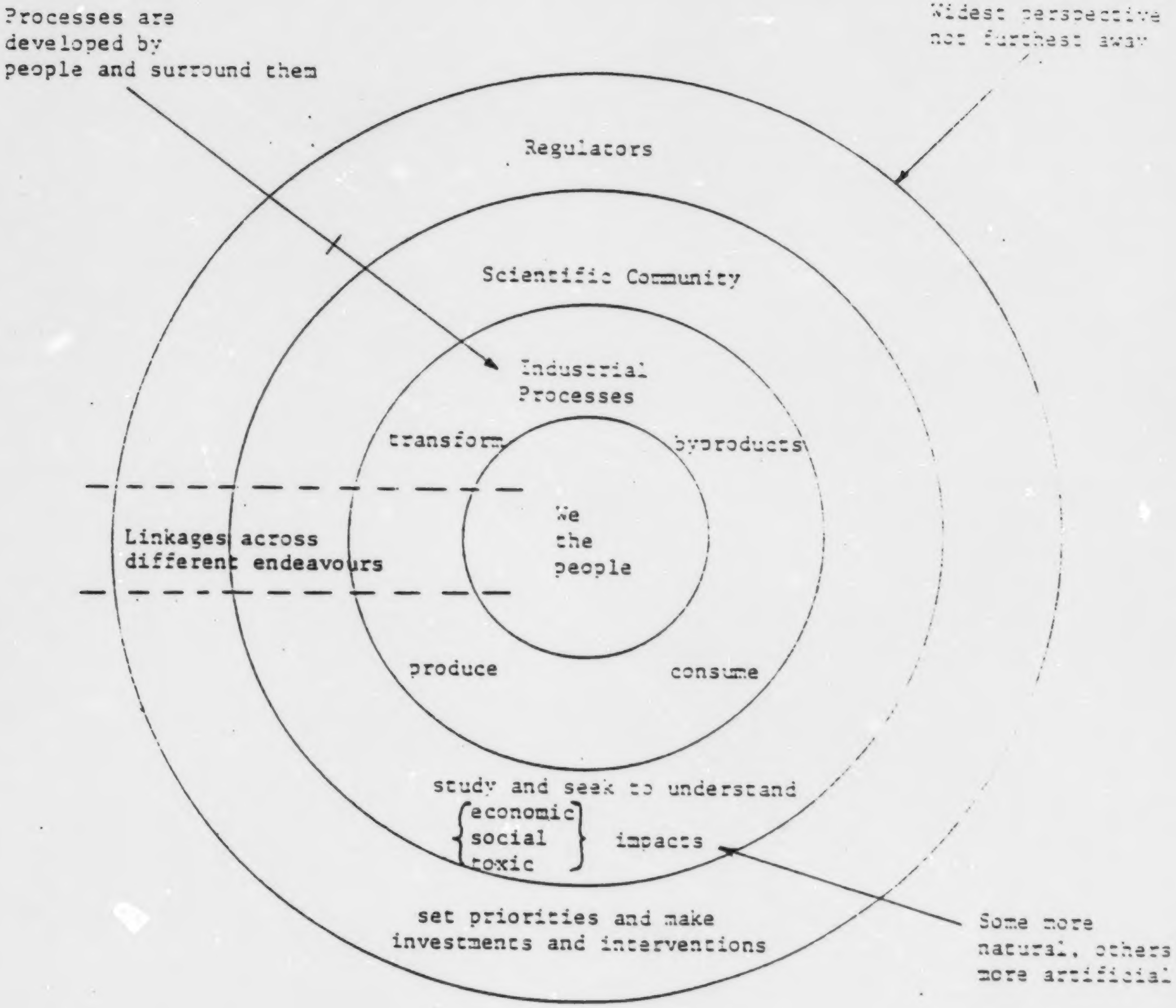
Don Wharton, Alberta Energy, said that his department historically had limited contact with environmental health issues, but energy issues are being increasingly driven by environmental concerns. For example, the Clean Air Strategy is bringing together all stakeholders.

Shaun Hammond noted that we as regulators have to deal with the problem that what was once a small crack between real and perceived risk has now become a credibility chasm. It affects not just Alberta Environment, but all of us, and, with all respect, Alberta Health cannot be considered the "knight on a white horse" who will save us. It will take all us.

John Ottery, Alberta Occupational Health and Safety, stressed the need to cooperate and establish clear linkages. It would be preferable for other departments to work with one focus rather than twenty-seven different health units. He was horrified by the potential for variability and inconsistency that the Public Health Act Waiver Regulation represents.

Dave Buchwald, Environment Council of Alberta, pointed out that people are rewarded for decisions that maintain and protect "turf." We have to find a way to reward cooperation rather than competition.

John O'Laney, Edmonton Board of Health, observed that the discussion is overlooking the delineation of responsibility that the provincial government has adopted. The Public Health Act expresses, through the health unit system, the government's policy of decentralized or local decision making. He suggested that many problems are much better resolved, and the solutions better accepted by the community, if it is done at the local level.


Processes are developed by people and surround them
Widest perspective not furthest away
Regulators
Scientific Community
Industrial Processes
transform
byproducts
We the people
Linkages across different endeavours
produce
consume
study and seek to understand
economic
social
toxic
impacts
set priorities and make investments and interventions
Some more natural, others more artificial

Mr. O'Laney then issued a challenge to the consultants not just to identify the problems, but to develop and propose specific mechanisms, methods and processes to foster inter-sectoral cooperation.

Al Anderson, Alberta Environment, was not clear where "environmental health" begins and where it ends. He felt that environmental protection was mainly directed at the protection of human health, and so we are all in the same ball game.

Gordon Shopland, Alberta Forestry, Lands and Wildlife, noted that his department was also involved in a strategic planning process. The review of the mandate found that some of it was statutory and some of it had evolved. The planning process included an evaluation of how well they had done and the identification of what it was necessary to share, given the limited resources. The needs for greater cooperation and for more public involvement were recognized.

Dwayne Waisman, Energy Resources Conservation Board, stated that cooperation and coordination are essential. For the ERCB, health issues arise in two contexts - (1) emergency situations; and (2) applications to the Board. Hearings have become very confrontational. There is a need to communicate to people that somebody is looking after the situation. There is a need for a central focus for health information. It is difficult for industry to deal with twenty-seven different health units. Industry does not even know who they all are.

Dr. Allan Legge, Alberta Research Council, pointed out that the air quality standards in the Clean Air Act regulations do not equate with protecting the environment. For example, the hourly average ambient concentration (170 ppb) for sulphur dioxide represents a 340-fold deterioration compared with the background level (0.5 ppb) of air entering Alberta.

Good decision making requires good definitions. "Environmental health" must be defined clearly and exactly to allow other agencies and jurisdictions to respond appropriately.

Dr. Al Nicholson, Chairman, Meeting of Directors, made mention of the public's mistrust, which he thought was entirely justified given the creation of the second ALPAC review panel with its strictly confined terms of reference that exclude environmental questions. the professionals in Alberta Environment must be mortified. People have a sense of being manipulated. The public perception is that the stool has only one leg and that the government is only concerned with promoting economic interests.

SESSION III - ESTABLISHING PRIORITIES

A. Determination of Health Risks

Dr. Graham Gibbs, RMC, listed the many potential sources of data in Alberta for health risk assessment, including morbidity and mortality statistics and biological change parameters. He noted that health care data does not readily lend itself to assessing health risk. Some risks may be measurable, some may be estimated, others are only perceived. It is important, however to look at ways of reducing even perceived risks.

Dr. Tee Guidotti's model, which demonstrates the unequal distribution of the impact of environmental disturbance over the population at risk, illustrated the relationship of toxicity and exposure to the process of hazard identification and control. Priorities should be based on measurability of risk, feasibility of solutions, and positive cost/benefit relationships. Key health affects should be targeted.

Public education on the nature of risks is necessary recognizing that Alberta will be dependent on resource extraction and agriculture for a long time. Risk management strategies should make the best use of resources and will require leadership, credibility, and multi-sectoral coordination and cooperation, including access to and utilization of national programs.

B. Health Outcomes Significantly Affected by Environmental Factors

Dr. Robert Steele, RMC, observed that we are constantly threatened by infectious diseases, with new and unexpected pathways emerging all the time. For example, consider the transmission of hepatitis and AIDS via blood transfusions and the sharing of needles by drug users. Zoonoses (animal diseases that also affect humans) must also be considered, as witness the concern in Britain over Bovine Spongiform Encephalopathy (mad cow disease), apparently transmitted by feeding cattle a high protein supplement produced from sheep brains. We must be constantly alert to the potential for new technology to create risks that may have disastrous consequences.

Key health outcomes which require attention are those having high morbidity, high mortality (especially in the young), no effective therapy, ready prevention, a potential major threat, increasing incidence, severe continuing disability, loss of economic productivity, and high cost of care.

Dr. Ron Wallace, RMC, likened the trophic pyramid of the food chain in the human ecosystem to an escalator which cycles the contaminants that we release to the environment back to us on all sides. The regulatory interventions are predicated on the infectious disease control measures of building barriers to contaminant migration, but these principles are not appropriate to address chemical contaminants. The problem represents one of the most profound philosophical issues that mankind has faced.

Dr. Wallace illustrated the intricacy of health risk assessment by reviewing the Southwest Alberta Medical Diagnostic Review (MDR). This is the most sophisticated, cross-disciplinary study of health impact ever attempted. it cost $3.7 million, involved the testing of 3600 Albertans and is now a reference study. it was designed to investigate the community's major concerns, which were excess mortality and cancer, as well as other major measurable health effects. It has achieved high peer acceptance. Its success and acceptance in the community were enhanced by a high level science advisory board, which met independently with the community, and a community advisory board. Since no measurable differences in health status with comparable and unexposed populations were detected, the major recommendation was that no further studies be done. The study was, however, poorly presented in the media. Criticism has focused on its attention primarily to the objective and measurable health effects rather than to the minor but more subtle complaints.

Dr. Steele suggested that certain traditional public health practices may be outmoded and proposed an audit process to address this concern. The aim of auditing should be to bring continued improvement in health. Recognizing that the auditing of health outcomes is very difficult, it is also important to audit process. Dr. Steele commended the achievements of the Environmental Health Services branch in developing information systems that would facilitate such auditing, and urged that this development be strengthened and continued.

Dr. Steele examined ways of implementing change, including proposals for upgrading the educational qualifications for the various public health practitioners, and examples of the setting of "health targets."

C. Participant Responses and Discussion

Roy Hickman reported that the Canadian Environmental Protection Act requires Health and Welfare Canada and Environment Canada to develop a priority substances list. Multi-stakeholder committees have identified 44 substances to be studied. Thirty or so assessment reports will soon be released. Dioxins and furans are to be eliminated. It is important to avoid duplication of effort. A domestic substances list will be published. Any new chemical must be submitted for a preliminary assessment to give the government an opportunity for review before it comes onto the market.

Environmental health guidelines are produced through the medium of the Federal-Provincial Advisory Committee on Occupational and Environmental Health. Examples are the guidelines for drinking water quality, recreational water quality and residential indoor air quality. Currently, procedures for investigating indoor air quality in institutions are under development.

Health and Welfare Canada is a repository for a number of international databases and, arising from the Green Plan, will become a national clearing house for environmental health information.

Dr. Nicholson stated that Alberta Health is going to have to take some responsibility for improvement. Right now, there are not enough experts in the Environmental Health Services branch to meet health unit needs. There should be epidemiologists, toxicologists, biostatisticians and others available to give advice to health units. Alberta Health must have a body of expertise that can provide the best quality information on health hazards and risks associated with new industrial development both as it affects humans directly and as it affects the organisms in the environment on which humans depend for sustenance.

What can we do about political interference in environmental decision making? Alberta Environment seems to be a tool of the political-industrial process. Can Alberta Health take an independent role in looking after the health of Albertans? The alternative is an independent agency such as a foundation for environmental health expertise. Concerning the balance of central authority and local authority, it must be recognized that large scale issues may require a provincial approach and more centralization.

The term "baseline studies" has become almost a catch phrase, but there must be some studies to address health effects prior to development, so that "Health" can take a "seat at the table" in assessing the impact.

Dr. Gibbs replied that there are a number of ways of looking at baseline studies. There is a good case for establishing background data, i.e. what is in the environment to begin with. It is extremely complex and difficult to detect human health impacts. A very large population is required. There are, however, some health status data already available, e.g. morbidity indices, to establish baselines. Baseline studies require lots of careful thinking.

Dr. Wallace agreed that baseline health studies are absolutely essential. The Acid Deposition Research Project was funded by many organizations and government departments, but there was no interference, political or otherwise, with the scientific investigation.

Dr. Legge observed that the MDR achieved objectivity and relevance. There is much information already available. The question is how does one do risk assessments with data that may not be considered real because of their high level of uncertainty.

Dr. Crutcher said that the Canadian Petroleum Association has an environmental code of practice. The industry encourages and supports research on its ability to protect occupational and environmental health. However, some concerns, such as hydrogen sulphide, are not just petroleum industry problems.

Dr. Waters stated that Public Health has to move beyond its primary emphasis on communicable diseases. These are no longer the major cause of ill health in Alberta. Not that we can forget about them. Infectious diseases are a constantly changing system and will continue to be an important of environmental health issue.

Mr. Rozon in summary observed that there is a need for holistic approaches that are well thought out.

SESSION IV - A BRIDGE TO THE FUTURE

A. A Conceptual Framework for Environmental Health

Dr. Schaefer observed that most of us belong to social and organizational pyramids that make life intensive and rewarding. One is rewarded for taking care of things in one's own pyramid, not those in someone else's pyramid.

Dr. Schaefer reviewed his model of environmental health. The boundary of the "Universe of Health Determinants" is no longer a circle. Now it is shown as a somewhat irregular and permeable field. It shrank when smallpox was eliminated. It expands with the introduction and accumulation of environmental contaminants and toxins. Each community has its own specific sphere of concern.

The "Core Element" modulates and helps to define the interactions between the environment and human health. The purpose of this study is to identify the players and their roles, and to address the "processes" of health protection within the core.

B. Emerging Directions for Further Consideration

Mr. Kohut outlined areas in which the consultants were considering possible recommendations, First, the need for interdepartmental coordination. There are a number of mechanisms available. Examples include the provincial emergency response plan for sour-gas well blowouts, the federal system of memoranda of understanding, and the various interdepartmental standing committees.

Second, the need to develop specialized human resources is a critical area. This includes both educational upgrading within Environmental Health and access to outside expertise.

Third, the potential role for Environmental Health in issues such as health promotion, injury awareness and prevention, noise regulation, and environmental impact assessment should be considered.

Mr. Rozon expanded on the issue of environmental impact assessment, noting its increasing public profile and the demand for more health input. The current process is restrictive and has many problems. Future directions should focus on the improving the science, procedures, jurisdictional linkages, and socio-political roles and participation.

C. Participant Responses and Discussion

Dr. Ernie Chang offered the Alberta Research Council as a resource in environmental health. It has a large pool of expertise (45 - 60 people) in environmental research and engineering. It conducts air and water quality modelling. Most recently, it has conducted assessments on the Aurum landfill and the ALPAC proposals. There is an oil sands department and a biotechnology department. One project involves the culturing of bacteria for heavy hydrocarbon degradation. Another potential area of support is in information services. For example, an expert system was designed to assist Alberta Public Safety Services to manage spills of hazardous materials. Dr. Chang stated that he would be pleased to act as an entry point, but cautioned that the ARC has not addressed the health concerns of human subjects. It will remain an organization devoted to technology.

Dave Buchwald said that it is important to consider what is in place already. For example, the Environment Council of Alberta held extensive hearings on noise impact. Mr. Buchwald suggested that the Environmental Impact Assessment process needs a system of preliminary disclosures before full regulatory review. A screening process exists, but who participates?

Shaun Hammond observed that the emergency response management system takes into account that there is no one on earth sufficiently expert to handle all emergency situations. Mr. Hammond expressed a preference, therefore, for Dr. Chang's model rather than Dr, Schaefer's. The core element is really a muddle. It may collapse, unless all the experts are involved. For example, biomedical waste must take account of all the stakeholders, if a successful resolution is to be achieved. It all depends on the attitudes of those involved.

Dr. Schaefer replied that his model represents the total process of environmental health intervention. It recognizes that this involves the concerns of a large number of organizations. Environmental health is in fact a total societal responsibility, not just that of one organization. There are, of course, different roles for the various members of the core element. Some place more emphasis than others on human health protection.

Mr. Hammond commented that the "key to success" is not so much "knowing it all," but knowing where to find the expertise necessary.

John O'Laney said that we had talked about many 'sexy" issues, such as carcinogens and the different types of hazards, but we need to know "what is" and "what should be" in Environmental Health. The historical public health success should not be ignored. Much of the work that needs to be done can be done by the same processes.

The inspection part of environmental health is, however, becoming impotent. The traditional areas of water, sewage, and garbage are being neglected, because there are no resources to pay attention to them. There is no one else to fill in the gaps, because only Health has the legislated mandate. The problem is complacency, meaning the attitude that if problems are under control, then they do not exist and can, therefore, be ignored. This is very dangerous.

Max McCann expressed agreement with what Mr. O'Laney had said, especially as it related to landfills.

Dr. Wallace pointed out that the "environmental lobby" has had a profound effect and has the potential, unfortunately, to cause the diversion of resources away from real health care needs, for example, in studying healthy people as in the MDR, while not supporting an air ambulance system. There is a need for institutional mechanisms that ensure that the health care voice is heard at the same level as that of the "environmental lobby."

Roy Hickman commented on the question of balance. The human environment is more difficult to address than the natural environment. For example, the indoor environment is critical in Canada, since we might spend 90% of our time indoors. There has been much talk about the impact of the environment on health, but the word "stress" has not been mentioned. Then, there is "visual pollution." Bill boards which divert a driver's attention may lead to motor vehicle accidents. There is a much larger dimension to environmental health than the discussion today has covered.

Dr. Chang observed that the demise or decline of public health has been much discussed, but that this may be a sign of success. Organizations succeed when they remove the need for their own existence. Public health may have succeeded so well that its principles have become institutionalized throughout society. Perhaps the routine inspection program or even the organization itself, is no longer necessary. New issues have emerged to take the place of the old ones. Consequently, we must have a broader vision, and be bold and courageous to deal with the new challenges.

Dr. Church noted that while there had been a lot of discussion on the problems and issues, none of this had served to clarify the appropriate roles and mandates. That clarification must happen, since, if the roles and mandates remain unclear, then the same disputes will continue to arise. Dr. Church expressed the strong hope that clear statements as to "who will do what" will be made. There is no shortage of potential good things to do. There is only the question of who is going to do them.

Mr. Kohut stressed that was the intent of the second seminar.

D. Open Forum

John Ottery found himself in agreement with many things said by Dr. Church, by Dr. Chang and by Mr. O'Laney as well. Over the last thirty or forty years, other expertise has grown up outside of Public Health. We are all growing up together, but the problem is that there is still no clear idea of what should constitute a definition of "environmental health."

Dr. Weaver complained about the waste of resources that goes into addressing the perceived risks of things that no scientist would consider critical, for example PCB's. Governments and industry, especially the pharmaceutical industry, are forced into defensive research that contributes nothing to the wealth of society. Recently, a survey of lead in school drinking water was conducted that was completely unjustified given the characteristics of Alberta water sources. Nonetheless, it had to be done, only to prove that the objections to its need were right in the first place. People are liable to imagine all kinds of things. Why should we go looking for a problem when there isn't one? What are we going to do to prevent waste given that our resources continue to decline? Environmental health is very much subject to fears and biases.

Dr. Crutcher felt that honesty and integrity are needed, we must have the fortitude to speak openly, so that thousands of dollars are not wasted. We must speak up on science, our science, and learn to speak the same language as the environmental advocates.

Dr. Church said that it seems that any advocacy role by Agriculture leads to a headlong rush to more legislation for environmental control. This is a form of creeping harassment of farmers. Can we expect that a farmer will have to go through an EIA every time he uses a chemical or plants a crop. EIA's are being taken to extremes. Why does the proposal for a tour boat on the North Saskatchewan in Edmonton need an EIA when the river is already badly polluted. All that is needed is a pump-out tank for the boat.

Dr. Legge reminded us that we should not equate environmental quality with legislation. There are no regulations to address emerging issues.

Dr. Schaefer cautioned that there has to be a match between expectations and what can be delivered. The discussion was wide interaction among equals, which had, ranged over many different levels. It is important to recognize that this study will not result in a total solution.

Mr. Flynn closed the seminar by pointing out that this day had been a warm-up for the next seminar, when recommendations for action will be proposed. While the recommendations cannot be overly specific, it is the intent to agree on a solid business agenda for the health component of "environmental health."

APPENDIX E

LETTER FROM CALGARY HEALTH SERVICES

Calgary Health Services
P.O. Box 4016, Station "C",
320-17th Avenue S.W.,
Calgary, Alberta T2T 5T1

90.10.17

COPY

Mr. Myroslaw B. Kohut, C.M.C.
Senior Principal/Project Director
R.M.C. Resources Management Consultants Holdings Ltd.
c/o Fax # (416) 762-1963

Dear Mr. Kohut:

Thanks for your request for a description of issues at the health unit level resulting from my comments at the last steering committee meeting. I believe that the Minister of Health for Alberta needs to know the scope of responsibility which rests with the environmental health workers in her department and how these responsibilities translate into protection of the health of the public.

Humans and the environment impact on each other. Human activities, such as urban growth and industrialization, may pollute and damage the environment, while the environment may have a detrimental effect on human health. A number of government agencies are in the business of trying to control this interaction. Many of these government authorities have the impossible task of promoting industrial growth and urbanization while trying to regulate it at the same time. Departments of health have developed credibility with the public and public interest groups since they have one and only one interest ... protecting public health.

The history of public health shows that the development of legislation and the roles of medical officers of health and public health inspectors arose to control morbidity and mortality resulting from massive outbreaks of communicable disease. A science developed, based on the 'germ theory', served as the backbone of public health. The record provides evidence that public health inspectors and medical officers of health have been instrumental in the control of communicable disease.

Public health programs have included routine inspections of restaurants and other food establishments, swimming pools, day-cares, hospitals, nursing homes, personal care facilities, animal premises, water treatment facilities and sewage disposal facilities, solid waste disposal facilities and etc. Public Health legislation also requires response to complaints pertaining to housing conditions, general nuisance, school health problems, and so on.

Over the years, however, the resources assigned to this traditional public health program have not kept pace. In Calgary for example, Calgary Health Services employed 30 public health inspectors in 1984. At that time, a total of 3800 establishments were routinely inspected. In 1989 the staff complement was still 30 inspectors, and the number of routinely inspected establishments was almost 6000, a 54% increase. Additionally, Calgary's population has grown from 619,000 in 1984 to approximately 700,000 in 1989, making it one of the largest cities in Canada. To state it mildly, the first big issue at the local health unit level is a lack of resources to do what we are required to do.

We are now entering an entirely new era with a new set of threats to health. Our nuisance regulation requires executive officers of the board of health to investigate and abate a condition that is or that may become injurious or dangerous to health. As one can imagine, this encompasses a broad scope of problems found in the community to which the public demands quick answers, coupled with scientific and technical advancement across our mandate. This expanded area of responsibility is perhaps best explained in point form to show the involvements of environmental health workers.

1. A seat at the table with public (i.e., Alberta Environment, City of Calgary) and private (i.e., consultants, industry) officials and scientists to conduct Environmental Impact Assessments. Our role is to respond to health risk assessment and management. These include, for example, the reclamation of old industrial sites intended for urban and industrial development. This involves decisions to be made on millions of dollars of development.

2. Advocating against developments within neighbouring municipalities who insist on building golf courses and subdivisions along the watersheds that serve as municipal drinking water supplies. Increased nutrients in the water supply requires more alum (linked to Alzheimer's disease) and more chlorine, yielding carcinogenic cogeners. Although definitive studies on the associated health risks are unavailable, we believe that this is a condition which could become injurious to health. Many hours are logged to follow the literature and to prepare statements for public hearings.

3. We have a growing ethnic population which demands very different lifestyles, hobbies, religious and cultural habits as compared to the norm. For example, the raising of scrub pigeons for food or hobby has proved to be a general nuisance to neighbours requiring our assistance. The taking home of placentae following human birth for religious purposes has led to a whole new set of investigations. These represent an entire new program.

4. We spent one man-year developing a biomedical waste management policy as a response to sloppy and inconsiderate disposal of this type of waste. Hospitals stockpiled these wastes in parking lots when local incinerators broke down. Curious children raiding garbage units at medical laboratories and physicians clinics found blood vials, needles, and other biomedical wastes. Implementation of a well designed policy continues and again represents a whole new area of programming that the community demands from us.

5. There are 21 storm sewers discharging into one of our drinking water reservoirs. They carry with them a host of wonderful substances from street run-off. A survey which we conducted found toxic chemicals from dry cleaners, and rug cleaners being dumped into storm sewers.

   As the City expands, there is an attempt to discharge additional tributary storm mains into existing collector trunks which in turn discharge into the drinking water reservoir. In an attempt to stop this practice, we have accepted a solitary position. We advocate publicly and to the approving authorities. Letters are sent, hearings are attended and media interviews are conducted. All of this is labour intensive.

6. As our City grows, land for development becomes extremely scarce and expensive. Our Waste Management Regulation requires a separation distance of 450 metres (1500 ft.) between landfills and hospitals, restaurants, homes and other places which prepare food. Developers with millions of dollars of land slated for development are requesting that Landfill owners apply for a waiver of the Regulation to move in closer to landfills. Each waiver hearing requires weeks of time to prepare a case for the local board of health and it also requires thousands of dollars to advertise and hold waiver hearings.

7. Many developers propose building man-made lakes to be used for recreational purposes. This presents a host of potential public health problems including death by drowning due to weed entanglement, adverse water quality from aquatic herbicides used for week control, pesticides and herbicides from perimeter properties, and so on. Proper design to protect the public health request many months of work for each lake proposal.

8. Evaluation of indoor air quality problems in private homes and public places. A great deal of morbidity is reported to this Agency resulting from indoor air quality. No other agency has a mandate to respond to these complaints. We are required to rent equipment at very high cost to conduct air studies.

9. Procedures for home owners to follow in asbestos removal (e.g.) removal and replacement of linoleum floor coverings with asbestos backing.

10. Development of a data base on injuries in Day Care Centres and the implementation of a day care injury prevention program.

11. Development of reclamation standards and guidelines for old sanitary landfills (15 have been found) or dry waste sites.

12. Evaluation of the public health risks associated with the use of new incompatible chemicals in swimming and/or whirlpools.

13. Evaluation of the biological risks associated with the use of new food production techniques.

14. Involvement in a study of environmental conditions in schools.

15. Conducting a study to determine the lead levels in soils at Day Care Centres adjacent to heavy traffic roadways.

16. Developing a diaper recycling policy.

17. Participating in community projects on recycling and composting.

18. Determining health risk of two old creosote sites leaking into the Bow River.

19. Evaluating health risks of proposed building by conducting assessments on an average of 4,000 development permits per annum. This requires a full-time employee.

20. Initiating baseline studies on drinking water quality.

21. Advocating for C.F.C. emission reduction initiatives to lower destruction of the global ozone layer.

22. Responding to major white papers such as the Rainbow Report, the Green Plan, legislation review, etc.

23. Initiating the provision of needle drop centres for drug users and diabetics.

24. Providing food handler training programs which are now mandatory.

25. Developing anti-Aids programs in bathhouses and needle disposal cleanups.

26. Proactive initiatives to reduce the possibility of tire fires and PCB fires.

27. Mediating disputes between landlords and tenants where legislation falls short of addressing health needs.

28. Informing the media on environmental health concerns.

The list goes on.

Conclusion

Speaking on behalf of local health agencies, this communication has, by example, attempted to explicate a crippled government service. Traditional programming in public health inspection is suffering a lack of resources while the demand keeps expanding. Our liability rises and indeed we have threats of mandamus on our hands.

Legislation requires that we respond to a new environmental health era. We are involved in this labour intensive field without any resources, with outdated legislation and frequently without expertise. The community and media are demanding our involvement. Without adequate resources, potentially rendering unqualified and under-researched decisions we may subject ourselves, our agency, the Local board of health and the department (Alberta Health) to unlimited liability. Currently our Board is threatened with a quarter million dollar lawsuit. Stated bluntly, we are experiencing a critical lack of resources to capably fulfil our mandate.

Recommendations

The Provincial Health Department needs to support local health units in the following manner:

1. Amend outdated legislation.
2. Develop new legislation to address new environmental health issues.
3. Provide equitable funding in relation to growth of responsibilities and population.
4. Promptly provide adequate and expert technical support through the Department or in the two major urban centres for the north and south of the Province.
5. Provide in-service education programs for public health inspectors on newer issues which we face.
6. Require and provide health units with medical officers of health.
7. Attempt to meet the manpower requirements in public health inspection of local health units by supporting or developing a degree training program which the graduate of 1995 will be required to have.

I believe if these changes occurred the provincial government would experience favourable support by a concerned public.

Sincerely,

John Pelton C.P.H.I.(C)., B.A., M.B.A.
Director
Environmental Health Division

Attachments

JP/ct

APPENDIX F

PROPOSED DOMAIN AND ASSESSMENT OF THE ENVIRONMENTAL HEALTH SERVICES BRANCH

PROPOSED DOMAIN AND ASSESSMENT OF THE ENVIRONMENTAL HEALTH SERVICES BRANCH

Priority Health Outcomes or Public's Perception of the domain of environmental health in Alberta	Hazards	Situational Analysis	Minister's Capacity to Respond			
			Strengths	**Weaknesses**	**Opportunities**	**Threats**
Communicable Disease	**Food-borne**		**Field:** trained body of investigators. **Branch:** well trained and experienced food microbiologist. Access to good data thru CDC. Developing information and analytical capability.	Not all health units conduct routine communicable disease report investigation. Conflict with agriculture food inspection agencies.	Expanding use of developing information technology (EHIS) to improve efficiency and effectiveness of inspection process possibly freeing resources for redirection to other priorities. Greater intersectoral collaboration with Agriculture including application of EHIS to improve efficiency thru monitoring and evaluation. Application of HACCP.	Continuing conflict with Agriculture leading to complete and partial loss of inspection function. Without access to inspection data, Minister of Health unable to respond to public as to how well health being protected, eg. We can try to educate people to cook hamburger well-done (E.coli 0157) and eggs 'till yolk solid (Salmonella enteriditis) but the means to reduce or eliminate these organisms from the raw food stuffs is mostly under Agriculture mandate now.
	E.coli 0157	• increasing/potentially fatal				
	Salmonella	• new threat in eggs				
	Campylobacter	• raw milk/no universal pasteurization				

Source: EHS Branch; internal files; November 1990.

PROPOSED DOMAIN AND ASSESSMENT OF THE ENVIRONMENTAL HEALTH SERVICES BRANCH
(continued)

Priority Health Outcomes or Public's Perception of the domain of environmental health in Alberta	Hazards	Situational Analysis	Minister's Capacity to Respond			
			Strengths	Weaknesses	Opportunities	Threats
Communicable Disease (continued...)	**Water-borne**					
	Giardia Lamblia	• endemic in mountain streams		Municipal public water supplies under jurisdiction of Alberta Environment. History of conflict and jurisdictional jealousy. Minister of Health does not have immediate access to data to respond to public. Private sewage disposal under jurisdiction of Alberta Labour - very low priority. History of conflict. Health's intervention limited to after-the-fact clean up.	A window of opportunity for intersectoral collaboration with Alberta Environment on data analysis and health impact assessment.	Lack of collaboration will deny the Minister the capability to give her assurance that health is fully protected.
	Viral Enteric	• occurs when disinfection and other drinking water protection measures fail				
	Shigella	• private sewage disposal failure				
	Swimming Pool	• well controlled by regs.	Most technologically advanced swimming pool regulations on continent. Good relationship with Alberta Labour on building code requirements.		Collaboration with Municipal Affairs and Alberta Labour on subdivision approval and development.	Lack of effective collaboration will deny the Minister the capability to assure the public that health is protected.

Source: EHS Branch; internal files; November 1990.

PROPOSED DOMAIN AND ASSESSMENT OF THE ENVIRONMENTAL HEALTH SERVICES BRANCH
(continued)

Priority Health Outcomes or Public's Perception of the domain of environmental health in Alberta	Hazards	Situational Analysis	Minister's Capacity to Respond			
			Strengths	Weaknesses	Opportunities	Threats
Communicable Disease (continued...)	Airborne		**Field:** 3 year pilot IAQ project in Calgary now concluding Concordia short course. **Branch:** some engineering expertise mainly related to indoor swimming pools.	No planned follow-up for pilot project or further technology transfer to field.	Tapping developing expertise at Concordia College and the U of A, as well as that in Occupational Health and Safety and the Alberta Centre, Vegreville. Much interest in field public.	Growing public concern will eventually prompt someone else to pick up the ball and run with it.
	Legionella	• potential in all humidified indoor environments.				
	Molds/Fungi	• potential in all air circulation systems.				
Environmentally induced Cancers excluding tobacco and dietary factors not involving chemical contaminants.	Radiation			No significant expertise in Field or in Branch.	Tapping expertise in Occupational Health and Safety. Alberta Cancer Board statistics. Alberta contribution to protecting ozone layer?	
	Sunlight	• increasing melanoma				
	Suntan Parlours	• (no comments)				
	Power Lines	• (no comments)				
	Radon	• not significant in Alberta.				

Source: EHS Branch; internal files; November 1990.

PROPOSED DOMAIN AND ASSESSMENT OF THE ENVIRONMENTAL HEALTH SERVICES BRANCH
(continued)

Priority Health Outcomes or Public's Perception of the domain of environmental health in Alberta	Hazards	Situational Analysis	Minister's Capacity to Respond			
			Strengths	Weaknesses	Opportunities	Threats
Environmentally Induced Cancers (continued...)	**Chemical Contaminants** Food: pesticide residues bioconcentration of pollutants in country foods. Water: industrial pollutants Air: VOC's	Probable cause of a very small proportion of all cancers, but an area of increasing public concern.	**Field:** A minimal investigative capability in IAQ only. **Branch:** Some experience in EIA process plus intersectoral links on pesticides and biotechnology.	Entirely dependent on published epidemiological and toxicological evidence and standards. No independent capability for assessment, and inadequate resources even to access available information to critique EIAs on health impact assessment grounds. Great array of resources and expertise in Environment, Agriculture and federal agencies. Health Unit staff poorly trained and motivated.	Tapping expertise at federal and provincial levels and in universities for epidemiological and toxicological resources. Public support for role plus support from HUAA, CPHA and AMA.	Without adequate resources cannot tap outside expertise effectively nor provide input to standard setting. Minister unable to meet on equal terms with colleagues will force abdication from mandate to speak for human health.

Source: EHS Branch; internal files; November 1990.

PROPOSED DOMAIN AND ASSESSMENT OF THE ENVIRONMENTAL HEALTH SERVICES BRANCH
(continued)

Priority Health Outcomes or Public's Perception of the domain of environmental health in Alberta	Hazards	Situational Analysis	Minister's Capacity to Respond			
			Strengths	Weaknesses	Opportunities	Threats
Reproductive Impacts • infertility • developmental problems • congenital defects	**Chemical Contaminants** Food: pesticides bioconcentration of organo-chlorides in the food chain. Water: industrial pollutants	Increasing male and female infertility. Industrial development is increasing the quantity of organo-chlorides released to environment. Associated with animal and human reproductive failures and developmental concerns. Northern aboriginal populations especially vulnerable.	**Branch:** Some expertise in EIA process plus intersectoral links on pesticides and biotechnology.	Entirely dependent on published edpidemiological and toxicological evidence and standards. No independent capability for assessment, and inadequate resources even to access available information to critique EIAs on health impact assessment grounds. Great array of resources and expertise in Environment, Agriculture and federal agencies. health Unit staff poorly trained and motivated. No immediate access to date on contaminant levels in game acquired by Fish & Wild Life Division.	Tapping expertise at federal and provincial levels and in universities for epidemiological and toxicological resources. Public support for role plus support from HUAA, CPHA and AMA.	Without adequate resources cannot tap outside expertise effectively nor provide input to standard setting. Minister unable to meet on equal terms with colleagues will force abdication from mandate to speak for human health

Source: EHS Branch; internal files; November 1990.

PROPOSED DOMAIN AND ASSESSMENT OF THE ENVIRONMENTAL HEALTH SERVICES BRANCH
(continued)

Priority Health Outcomes or Public's Perception of the domain of environmental health in Alberta	Hazards	Situational Analysis	Minister's Capacity to Respond			
			Strengths	Weaknesses	Opportunities	Threats
Stress Impacts	Noise	Municipal bylaw control not universal. Health Units respond to complaints. Some review in EIA process.	Some experience at both Branch and Field levels to investigate complaints and assess impact.	No regulatory authority to prevent, only after the fact correction by Section 72 of Act.	Tapping expertise in Occupational Health and Safety, ECA, universities and private sector.	
	Odour: intensive livestock sour gas pulp & paper	Past decade has seen a quadrupling of piggeries and feedlots in some areas of province. Larger numbers of animals and more concentrated waste accumulations bringing increasing complaints. The number of gas processing plants and pulp mills are also increase bringing public apprehension of odour impacts. Public concern about quality of life.	**Field:** trained investigators. **Branch:** experienced in regulatory control and complaint investigation.	Lack of technical support for objective assessment. Conflict with Agriculture "Right to Farm" posture. Subjective nature of impacts. Lack of immediate access to air quality monitoring data produced by Environment.	New technology for odour control and analysis of mercaptans at AEC, PHAAB Hearings. Collaboration and joint assessment of air quality data with Environment.	Agriculture may continue to press for the elimination Health involvement in land use planning. Lack of epidemiological assessment and access to objective data denies Minister the capacity to give assurance of health protection.

Source: EHS Branch; internal files; November 1990.

PROPOSED DOMAIN AND ASSESSMENT OF THE ENVIRONMENTAL HEALTH SERVICES BRANCH

(continued)

Priority Health Outcomes or Public's Perception of the domain of environmental health in Alberta	Hazards	Situational Analysis	Minister's Capacity to Respond			
			Strengths	**Weaknesses**	**Opportunities**	**Threats**
Respiratory and Allergy Impacts	Chemical and particulate air contaminants in both outdoor and indoor environments.	Morbidity and mortality associated with asthma is increasing. Public very concerned about quality of life impacts.	**Field:** 3 year IAQ pilot project. **Branch:** some IAQ expertise.	Outdoor air quality regulated by Environment. Under Clean Air Act. No immediate access to air quality monitoring data. Limited capability for independent verification.	Intersectoral collaboration on health impact assessment with Environment. Tapping expertise in universities.	Lack of collaboration effectively denies the Minister the capacity to offer assurance on health protection.
Injury	**Acute Chemical toxicity:** • chemical spills in general • chlorine gas releases **Mechanical hazards:** • housing • schools • playgrounds • swimming	Increasing industrial development means more chemicals in transit. Swimming pool inspections. Regulatory capacity to correct evident nuisances.	**Field:** trained investigators with local knowledge. **Branch:** some injury preventive skills. Collaboration with Uniform Bldg. Standards Branch on Alberta Building Code. Injury Prevention is a Public Health Division priority. Niche for Environmental Health support by AMA.	Collaboration with APSS, Training and motivation. Minister not informed of many different activities.	Much expertise available in many different sectors eg. U of A Injury Awareness and Prevention Centre. Much data for epidemiological analysis.	High fragmented mandate and activity leaves Minister unable to account for effectiveness of overall activity.

Source: EHS Branch; internal files; November 1990.

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